THESIS

SECONDHAND EFFECTS OF ALCOHOL USE: THE CONSEQUENCES OF PEER DRINKING BEHAVIOR

Submitted by

Morgan A. Boyle

Department of Psychology

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Master's Committee:

Advisor: Mark Prince

Deana Davalos
Nathaniel Riggs

ABSTRACT

SECONDHAND EFFECTS OF ALCOHOL USE: THE CONSEQUENCES OF PEER DRINKING BEHAVIOR

Objective: College student alcohol misuse is a public health concern that negatively affects the individual using alcohol, and the individual's peers. The secondhand effects of alcohol use (SEA) are adverse consequences caused by another's drinking (i.e., study/sleep interrupted, being insulted or humiliation, sexual assault or rape). The present study explored SEAs relationship to personal alcohol, alcohol related consequences, and wellbeing. This study also investigated coping as a possible moderator for SEA. Method: 1,168 students were recruited from an undergraduate research pool. Participants completed a survey which assessed for SEA, wellbeing, personal use, alcohol related consequences, and coping strategies. Results: SEA was found to have a significant positive relationship with personal use as well as alcohol related consequences. In addition, we found that higher levels of maladaptive coping strengthened the relationship between SEA and alcohol related consequences while adaptive coping did not significantly weaken this interaction. Conclusion: This study established a relationship between SEA and increased personal use as well as alcohol related consequences, a relationship which was strengthened by maladaptive coping. By establishing a connection between SEA and harmful behaviors I hope to increase understanding and awareness regarding the deleterious effects of SEA. In addition, it is hoped that these findings may inform intervention and treatment recommendations for those experiencing adverse outcomes due to SEA.

AKNOWLEDGEMENTS

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To my wonderful and patient partner Chad. Thank you for all the dinners you cooked when I got stuck in edits and forgot to eat, for being just as excited as I was each time I finished a round of edits, but most importantly for making the coffee every morning. I couldn't have done this without you.

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TABLE OF CONTENTS

Introduction

College student alcohol misuse is a widely recognized public health concern in the United States. Over half of the college student population reports using alcohol and over one-third of college students report engaging in binge drinking (4 drinks for women or 5 drinks for men consumed within two hours; Wechsler et al., 1998) at least once in the past month. Nearly one in ten students binge drinking at least weekly (National Survey on Drug Use and Health [NSDUH], 2018). Alcohol misuse, which encompasses behaviors such as binge drinking, is defined as a pattern of consumption that puts an individual at increased risk for adverse health outcomes (National Institute of Health [NIH], 2020). Alcohol misuse is associated with poorer academic achievement (Cabalatungan & McCarthy, 2015), physical and mental health problems (White & Hingson, 2013), and even death (Hingson et al., 2009; NIH, 2020). A substantial amount of research has been dedicated to addressing the negative consequences of alcohol misuse (Barnes et al., 1992; Hingson et al., 2009; Marcus & Siedler, 2015; White & Hingson, 2013), with the National Institute on Alcohol Abuse and Alcoholism (NIAAA) endorsing almost 60 interventions alone for the general population (NIH, 2020). The high rates and severe consequences of alcohol misuse make college student alcohol use a critical area for intervention efforts (Carey et al., 2007). While much has been learned about consequences of and interventions for those who directly use alcohol, research has not yet thoroughly examined those who have been negatively affected by other's alcohol use. The Secondhand effects of SEA can originate from a multitude of sources including parents (Kuppens et al., 2020), spouses (Ferris et al., 2011; Greenfield et al., 2009), neighbors (Greenfield et al., 2016; Wechsler), coworkers (Dale & Livingston, 2010) or even strangers (Giesbrecht et al., 2010; Karriker-Jaffe, Greenfield,

& Kaplan, 2017). Studies of SEA highlight the need to disseminate the effects of general SEA, from the SEA effects of specific social relationships, noting differences in SEA between family initiated, friend/peer initiated, and stranger initiated SEA (Livingston, Wilkinson, & Laslett, 2010; Karriker-Jaffe, Greenfield, & Kaplan, 2017). For college students, the most salient form of SEA comes from their peers (Wechsler et al., 1995). These individuals, who are vulnerable to secondhand effects of alcohol SEA, are neglected in regard to intervention, access to resources, and research validating outcomes.

Secondhand Effects of Alcohol

SEA is defined as the negative consequences experienced due to a peer's alcohol use. Wechsler and colleagues (1995) established much of the preliminary research on SEA, provided validation for the consequences of SEA, and reported prevalence rates for the more commonly experienced SEA. SEA includes experiences such as being insulted or humiliated, serious arguments or quarrels, pushed or hit, property damage, taking care of a drunk student, finding vomit in halls or bathrooms, having study or sleep interrupted, and being sexually assaulted (Stiles, 2013; Wechsler et al., 1995). Although there is not a standard scale that researchers consistently use to measure SEA, items from the Harvard School of Public Health College Alcohol Study (CAS, Wechsler et al., 1995) are often used as a guideline. The CAS consists of four nationally representative samples administered in 1993, 1997, 1999, and 2001 from 120 four-year colleges with a sample of 50,000 students (Wechsler & Nelson, 2008). The goal of the CAS was to gather nationally- representative data regarding college student alcohol use. A substantial amount of the literature (Chun et al., 2009; Cabalatungan & McCarthy, 2015; Wechhsler et al., 1995; Wechhsler et al., 1998; Wechhsler et al., 2001; Wechhsler et al., 2002; Wechhsler & Nelson., 2008) regarding SEA is devoted to analyzing data collected by the CAS.

It is estimated that 60-84% of US college students experience negative consequences related to SEA, and 55% of students have experienced at least two SEA (Boekeloo, Bush & Novik, 2009; Diep et al., 2015; Enser et al., 2017; Wechsler & Nelson., 2008). The most commonly endorsed experiences of SEA are study/sleep interruption (60%), having to take care of a drunken student (48%), and being insulted or humiliated (29%) (Wechsler et al., 2002). One study found that 79.8% of first-year students had experienced at least one SEA within their first two months on campus (Boekeloo, Bush & Novik, 2009). Statistics regarding SEA occurrences gathered across multiple data sources (i.e., the National Highway Traffic Safety Administration Fatality Analysis Reporting System, Centers for Disease Control and Prevention Injury Mortality Data, National Coroner Studies, census and college enrollment data, the National Household Survey on Drug Use and Health, and the College Alcohol Study) found that in 2001 12% of students were assaulted by another student who had been drinking, and 2% of students experienced sexual assault or rape by a student who had been drinking (Hingson et al., 2009). Follow-up studies have found little to no reduction in these statistics (Hingson et al., 2009). The research that exists, beyond prevalence rates, regarding SEA is limited, and deeper examination of SEA and its outcomes is needed given the serious risk of harm (Giesbrecht et al., 2010). A limitation of existing research regarding SEA is that it often focuses on the prevalence of SEA alone, without examining sequalae of SEA (Wechhsler et al., 1995; Wechhsler et al., 1998; Wechhsler et al., 2001; Wechhsler et al., 2002; Wechhsler & Nelson., 2008). A next step in building the knowledge base around SEAs effects on students is to collect data exploring SEAs relationship to outcome variables beyond prevalence rates.

SEA & Personal Use

One way that SEA acts as a global public health concern is through its influence on personal alcohol use. Personal alcohol use specifically among college aged students is problematic due to its associations with increases in driving under the influence (DUI), chronic disease, social/interpersonal trouble, poor class/work attendance, impulse control, and physical consequences (Read et al., 2006; Ramirez et al., 2020). SEA has been shown to have a positive association with levels of personal alcohol use (Boekeloo et al., 2009; Stiles & Rice, 2019; Wechsler et al., 1995), and individuals who choose peer groups that engage in alcohol use are more likely to be subjected to, and subject others to SEA (Boekeloo et al., 2009). The main explanation for this interaction suggests that membership into a peer group that regularly engages in alcohol use will naturally increase an individual's chances of interacting with an intoxicated peer and therefore elevating the risk of exposure to SEA (Boekeloo et al., 2009). An example of this is seen in dormitory living, which is positively associated with higher rates of drinking behaviors and alcohol misuse (Barnes et al., 1992; Carter et al., 2010; Wechsler et al., 2002). Individuals who live in sorority or fraternity housing are at distinctly elevated risk for experiences of SEA, with 83% of individuals reporting that they had experienced more than one SEA while in college (Wechsler et al., 2002).

College students are faced with multitude of risk factors (i.e., peer groups, norms, living environment) that increase rates of personal alcohol use, as well chances of experiencing SEA. Understanding which students are at a higher risk, for both personal use and SEA, is important in understanding where to begin prevention efforts, and how to increase student health. One consequence not often reported on is how SEA may affect wellbeing.

Wellbeing

A major component in college student health is maintaining positive human functioning, also known as wellbeing (Ryff, 1989). While the concept of wellbeing may vary across fields, an overlapping theme is that individuals with high levels of wellbeing should be self-actualized, individuated, and optimally developed (Ryff, 2014). Outcomes for high wellbeing include resisting social pressures, choosing contexts which match with personal values, directed life goals, and a concern for the welfare of others (Ryff, 2014). Individuals with high wellbeing across ages report fewer chronic health conditions (i.e., stomach problems, back problems, arthritis, high blood pressure) and better maintenance of goals (Ebner, Freund & Baltes, 2006; Keyes, 2005).

Preliminary investigations into the effects of alcohol use on wellbeing found a negative relationship (Blank et al., 2016; Zullig et al., 2001). While non-significant, Alcohol Use Disorders Identification Test (AUDIT) scores of 5 or greater among college women, and AUDIT scores of 1 or greater among college men, were related to decreased wellbeing (Blank et al., 2016). These findings indicate that moderate alcohol use in women, and general use in men may be related to lower wellbeing. Low wellbeing is a concern as wellbeing normally serves as a protective factor for health conditions and mental health, and without high wellbeing students may experience more physical and mental health problems. While research has identified a negative association between personal alcohol use and wellbeing, it has yet to be established if a relationship between wellbeing and SEA exists. Research has however found significant deleterious effects between other forms of peer-initiated harms (workplace bullying) and wellbeing (Bashir & Hanif, 2019). Additional research has found that co-habituating with an individual categorized as a heavy drinker is linked to decreased well-being (Livingston, Wilkinson, & Laslett, 2010). Even without specific data regarding SEA, the relationship between

SEA and alcohol use, other's alcohol use and wellbeing, as well as data regarding other forms of peer-initiated harms, indicates that SEA may affect student wellbeing. It could be that SEA leads to increased personal alcohol use, which leads to decreased wellbeing. Because high wellbeing serves as a protective factor for students, it is critical that research disseminates how SEA may affect wellbeing.

Current literature suggests that SEA may lead to increased personal alcohol use (Boekeloo et al., 2009; Stiles & Rice, 2019; Wechsler et al., 1995), increased alcohol related consequences (Barnes et al., 1992; Hingson et al., 2009; Marcus & Siedler, 2015; White & Hingson, 2013), and poorer wellbeing (Livingston, Wilkinson, & Laslett, 2010). However, as the experience of SEA itself is a stressful event, it is possible that an individual's response to stress may have a meaningful effect on how SEA effects an individual.

Coping

Coping is defined as the effort to manage stimulus or events that are deemed stressful (Bigs, Brough & Drummond, 2017; Chesney, Neilands, Chambers, Taylor, & Folkman, 2006; Lazarus & Folkman, 1984). Lazarus and Folkman (1984) theorized that coping is initiated during primary appraisal when an event or stimulus is deemed stressful (e.g., an intoxicated peer physically assaults you). Stressful events can be broken down during further to help determine whether the stressor assessed will cause substantial harm/loss, threatened harm/loss, or challenge (Chesney et al., 2006; Lazarus & Folkman, 1984). During secondary appraisal an individual decides how they may resolve, shape, or manage the stressor. Coping can occur through emotion-focused processes which involves coping responses that attempt to manage the emotional response to stressful events, or problem-focused coping which changes the negative aspects of the stressful event. While there is limited research connecting SEA to mental health

outcomes, one study found experiences of SEA related to increases in depression, anxiety and stress (Thompson, Wood & MacNevin, 2019).

The college population reports high rates of stress with previous studies reporting 75-80% of students reporting moderate stress and 10-12% reporting high/severe stress (Brougham et al., 2009; Pierceall & Kiem, 2007). While college students may experience similar stressors as their non-collegiate peers such as separation from family, change to living environment, or increased financial burden; college students in particular face unique stress in response to educational demands (Brougham et al., 2009; Metzger et al., 2017) and peer use (Boekeloo, Bush & Novik, 2009; Diep et al., 2015; Enser et al., 2017; Wechsler & Nelson., 2008). A key factor in how college students react or respond to stressors is based on their ability to cope.

The main focus of coping is to relieve distress caused by a stressful event. When an individual responds to a stressful situation with an appropriate coping response the response is referred to as adaptive coping and typically results in the individual experiencing fewer psychological symptoms (Chesney et al., 2006; Park, Folkman, & Bostrom, 2001). Adaptive coping aims to reduce the effect of stress while mitigating negative outcomes by using healthy coping strategies (e.g., acceptance, social support) (Blevins, Farris, Brown, Strong, & Abrantes, 2016; Cohen, Underwoord, & Gottlieb, 2000). Coping strategies can be substantial mediators for college stress with adaptive coping strategies leading to lower levels of stress, increased resourcefulness, improved study habits, and better time management (Akgun & Ciarrochi, 2003; Misra & McKean, 2000).

When individuals respond to uncontrollable stress with problem-focused strategies or controllable stressors with emotion focused strategies the result is referred to as maladaptive coping. Maladaptive coping occurs when individuals respond to stressors with avoidant or

destructive coping mechanisms such as procrastination or substance use (Sirois & Kitner, 2015; Smith, 2006). In the short term, maladaptive coping may mitigate or reduce distress caused by the stressor as the individual uses strategies which decreases their discomfort (drinking alcohol in response to having a distressing conversation). However, maladaptive coping focuses on immediate reduction of stress and often compromises long term stress reduction by utilizing approaches such as avoidance (Sirois & Kitner, 2015). Avoiding or disengaging from stressors may increase the distress the individual is experiencing as maladaptive coping often does little address or resolve the stressor (Sirois & Kitner, 2015). Maladaptive coping in college populations has been related to increases in behaviors which impair academic success or increase stress (Metzger et al., 2017; Perkins, 2002; Presley & Pimental, 2006; White & Hingson, 2013). One study exploring coping among college students found significant indirect effects when maladaptive coping was used as a mediator between academic stress and alcohol use (Metzger et al., 2017). Alcohol's relationship to stress and coping may indicate that students experiencing stress may have an increased likelihood of using alcohol to cope (Metzger et al., 2017).

Alcohol use as a coping strategy is labeled as a maladaptive strategy due to its primary function which is to reduce immediate feelings of distress or avoid distress (Hasking, Lyvers & Carlopio, 2011; Kassel, Bornovalova & Mehta, 2006). Individuals utilizing alcohol as their primary coping mechanism are at risk for problematic alcohol use as this maladaptive coping is likely to continuously take the place of adaptive or healthy coping mechanisms (Cooper, Russell, Skinner, Frone & Mudar, 1992; Corbin, Farmer & Nolen-Hoekesma, 2013; Hasking, Lyvers & Carlopio, 2011). The relationship between maladaptive coping and alcohol use is highlighted in Hasking, Lyvers & Carlopion's (2011) study which found that when participants used alcohol to increase confidence and reduce tension, there was an increase in overall drinking behavior.

These findings indicate that it was participants' beliefs that alcohol use could decrease their distress which effected their alcohol use behaviors. The belief that alcohol use is a helpful coping mechanism is particularly harmful as previous studies have linked maladaptive coping with heavy drinking and alcohol related consequences (Britton, 2004; Evans & Dunn 1995; Karwacki & Bradley, 1996; Rafnsson et al., 2006).

Given that coping is an integral component to an individual's response to stress, it may play an important role in individuals responses to SEA based stressors. While research regarding copings relationship to SEA is lacking, previous research on coping's mediating role in alcohol use and stress levels indicates a possible mediating role for SEA (Akgun & Ciarrochi, 2003; Metzger et al., 2017; Misra & McKean, 2000). It is also possible that maladaptive coping in the form of alcohol use may moderate SEAs relationship to personal use patterns.

Current Study

Alcohol use can lead to a host of negative consequences (Read et al., 2006; Ramirez et al., 2020). The established link between SEA and higher personal use (Boekeloo et al., 2009; Stiles & Rice, 2019; Wechsler et al., 1995), indicates that students subjected to SEA are at risk for negative consequences related to SEA (lower wellbeing) and personal use. Given the prevalence of SEA, this study was primarily interested in exploring the relationship between SEA and factors such as personal alcohol use, alcohol related consequences, and wellbeing which may be affected by SEA. Further, the proposed study sought to explore adaptive coping as a potential protective factor that could reduce the effects of SEA, as well as maladaptive coping as a potential risk factor that could increase the deleterious effects of SEA. Moreover, adaptive coping mechanisms if found to be protective, could be considered for both clinical and academic settings in order to help students achieve increased wellbeing.

Hypotheses

I hypothesized that SEA would have a negative effect on college student health, with increased personal use and decreased wellbeing. Aim 1 of this study was to assess the relationship between college students' experiences of SEA, personal use, alcohol related consequences, and wellbeing. Aim 2 was an exploratory aim that examined whether coping moderated the effects of SEA on alcohol related consequences. To address these aims, several hypotheses were be tested.

Aim 1:

1. Hypothesis 1: Those who experienced more SEA would report more personal alcohol use compared to those who had experienced less SEA. See Figure 1.
2. Hypothesis 2: Those who experienced more SEA would report lower wellbeing compared to those who had experienced less SEA. See Figure 1.
3. Hypothesis 3: Those who reported higher levels of personal alcohol use would report lower levels of wellbeing. See Figure 2.
4. Hypothesis 4: Those who reported more adaptive coping would report higher levels of wellbeing. See Figure 3.
5. Hypothesis 5: The relationship between SEA and wellbeing would be mediated by alcohol use, with more personal alcohol use transmitting the effect of SEA to wellbeing. See Figure 4.
6. Hypothesis 6: Those who had experienced more SEA would report more alcohol related consequences compared to those who had experienced less SEA controlling for personal use. See Figure 1.

Aim 2:

7. Hypothesis 7: The relationship between SEA and alcohol related consequences would be moderated by adaptive coping controlling for personal use. This was such that those with more adaptive coping skills would have a weaker relationship between SEA and alcohol related consequences and those with more maladaptive coping would have a stronger relationship between SEA and alcohol related consequences. See Figure 5.
8. Hypothesis 8: The relationship between SEA and alcohol related consequences would be moderated by maladaptive coping controlling for personal use. This was such that those with more maladaptive coping would have a stronger relationship between SEA and alcohol related consequences. See Figure 5.

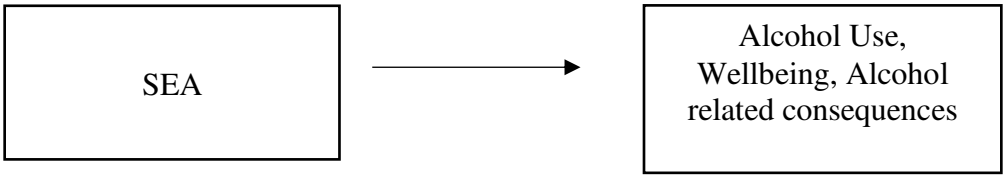


Figure 1

Note. Proposed model of the direct effect. Figure refers to Hypotheses 1, 2, & 6.

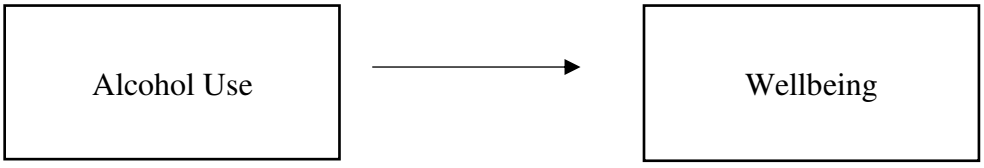


Figure 2

Note. Proposed model of direct effect. Figure refers to Hypothesis 3.

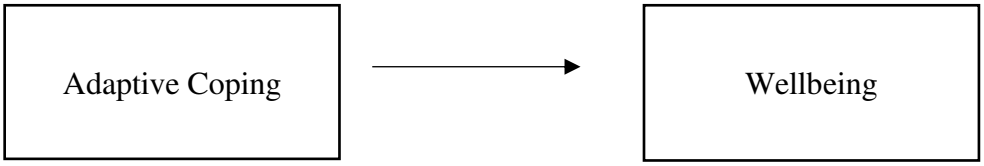


Figure 3

Note. Proposed model of direct effect. Figure refers to Hypothesis 4.

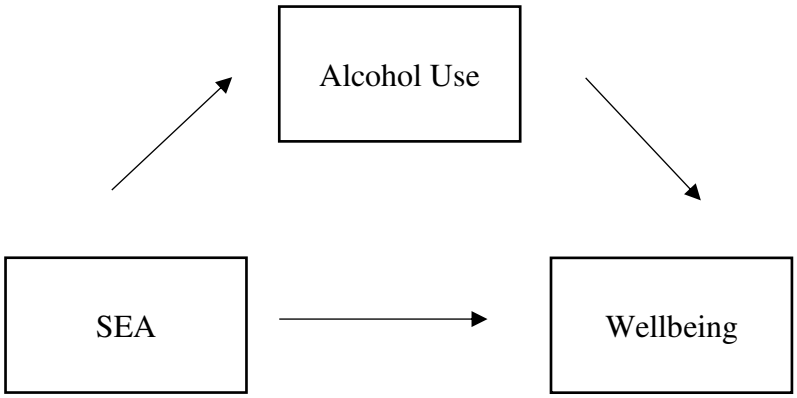


Figure 4

Note. Proposed model of the mediating effect. Figure refers to Hypothesis 5.

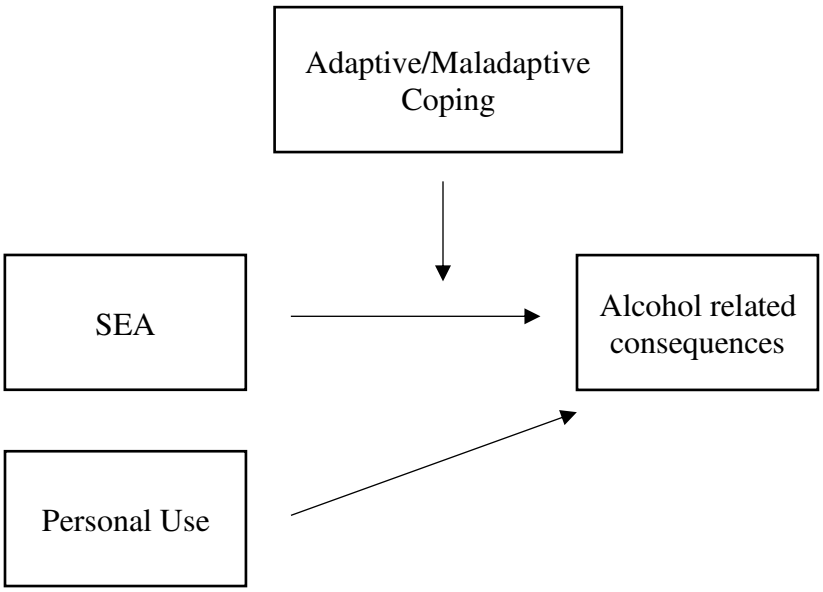


Figure 5

Note. Proposed model of the moderating effect. Figure refers to Hypotheses 7 & 8. Hypothesis 7 refers to adaptive coping, and Hypothesis 8 refers to maladaptive coping.

Methods

Participants and Procedure

Participants. 1,168 undergraduate college students from Colorado State University were recruited as a part of a study on secondhand alcohol effects. Sociodemographic information and survey measures on study constructs were collected from participants who consented to take part in the study for course credit.

Procedure. This study was accepted by the Colorado Multi-Institutional Review Board at Colorado State University (Protocol ID: 20-9960H)[1]. Participants were recruited with the option of gaining course credit (½ credit) for their participation. Participants received the following information before completing the study: *This research study is designed to examine the relationship between the secondhand effects of alcohol use and outcomes like alcohol use consequences and wellbeing. Specifically, through this research, we are hoping to better understand how alcohol related consequences caused by peers drinking behaviors may negatively influence personal factors such as self-actualization, individuation, and optimal development. Thank you for your participation.*

The measures for this study were: the socio-demographic questionnaire (see appendix A), Secondhand Effects of Alcohol Questionnaire (SEAQ; see appendix B), Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; see appendix C), Supplementary Alcohol Behavior Question (see appendix D), Alcohol Use Disorders Identification Test - Consumption (AUDIT-C; see appendix E), Psychological Well-Being Scales, 42 Item Version (PWB; see appendix F), and the Brief COPE (see appendix G). Due to possible lifestyle changes caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic or more

commonly known as COVID-19, participants were asked to respond to each question based on their current experience as well as their experience pre COVID-19 which was defined as prior to March 2020.

Measures

Demographic Variables. Participants answered questions regarding age, race, ethnicity, sex, sexual orientation, family history, and social history (see appendix A).

Secondhand Effects of Alcohol Questionnaire (SEAQ). Items from the Harvard College Alcohol Study (Wechsler et al., 1995) were used to measure the frequency of SEA. The SEAQ (Wechsler & Nelson, 2008) is a 10-item measure that measures the frequency of SEA. Previous studies have used the SEAQ by standardizing the number of items to calculate a mean score (Cabaltungan & McCarthy, 2015). The SEAQ asks participants to rate the frequency of SEA experiences (i.e., been insulted or humiliated) because of other students drinking on a 5-point Likert scale ranging from 1 (Daily or almost daily) to 5 (never). For the present study, one double-barreled item (i.e., "had your sleep or study interrupted"), was split into two separate items, resulting in a total of 10 items (Longo, 2019). SEA scores were added and summed for a SEA total score (Boekeloo, Bush & Novik, 2009). The SEAQ has demonstrated strong internal consistency reliability with Cronbach's alpha coefficient equal to ($\alpha = .85$; Longo, 2019). In addition, a binary SEA variable can be computed by taking the summed score and assigning anyone with a total score equal to 50 as never having experienced SEA and anyone with a score less than 50 as having experienced SEA (Langley, Kypri & Stephenson, 2003). This binary variable is useful for broad comparisons of any experience of SEA compared to no experience of SEA.

Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ). The BYAACQ (Kahler, Strong & Read, 2005) is a 24-item measure. The BYAACQ asks participants whether they have experienced a range of alcohol related negative consequences (i.e., I have felt guilty about my drinking). Items are dichotomous and participants are asked to respond "yes" or "no" if they have experienced an item. Total scores range from 0 to 24, higher scores indicate greater consequences. The BYAACQ has demonstrated strong internal consistency reliability at (α = .84, Kahler et al., 2008).

Alcohol Use Disorders Identification Test-Consumption. The AUDIT-C (Bush et al., 1998) is a three-item measure that assess alcohol use in regard to frequency of drinking, quantity of consumed alcohol, and frequency of heavy drinking. Items are scored on a 4-point Likert scale ranging from 0 (never) to 4 (6 or more times a week). Scores range from 0 to 12, with higher scores indicating higher risk for alcohol use. At risk drinking for college students is considered a 7 or higher for males and 5 or higher for females (DeMartini & Carey, 2012). The AUDIT-C has demonstrated adequate internal consistency reliability (α = .77; Longo, 2019).

Supplementary Alcohol Use Question. Heaviest day of drinking was measured by asking "Think of the day you consumed the most alcohol in the last month: How many standard drinks did you consume on that day". Heaviest day of drinking or "maximum drink" has been used in previous studies to evaluate participants maximum quantity of alcohol use in the past month (Patrick & Maggs, 2011).

Psychological Well-Being Scales (PWB), 42 Item version. The PWB (Ryff, 1989) is a 42-item scale that measures the six factors of psychological well-being: self-acceptance (7 items), purpose in life (7 items), environmental mastery (7 items), positive relationships (7 items), personal growth (7 items), and autonomy (7 items). The PWB asks

participants to rate their agreement on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Twenty-two items on the PWB consist of negative item content and 20 questions have positive item content. Negative items are reverse scored so that high values indicate well-being. PWB total scores range from 42-252, with higher scores indicating greater well-being. Items were separated and summed into the 6 subscales (See Appendix E). The PWB scales demonstrated adequate internal consistency reliability (ranging from $\alpha = .69$ to $\alpha = .85$; Morozink et al., 2010)

Brief COPE. The Brief Cope (Carver, 1997) is a 28-item measure. Items are scored on a 4-point Likert scale ranging from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). Items are scored and summed for a total score on each subscale. The brief COPE has 14 subscales including self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. Alpha values range from (.50, venting) to (.90, substance use). The Brief COPE has been use used to evaluate both clinical and non-clinical populations (Carver, 1997).

Analysis Plan

Descriptive Statistics. Means, standard deviations, and frequencies were calculated for all variables. Median and ranges were calculated for all for non-normal variables. Currently there is no formal scale or theory used to describe or measure SEA, the SEAQ, which is comprised of items from the Harvard CAS has been used in previous studies when trying to measure SEA (Boekeloo, Bush & Novik, 2009; Cabalatungan & McCarthy, 2015; Langley, Kypri & Stephenson, 2003; Longo, 2019; Wechsler & Lee, 2001). Previous studies used questions from the Harvard CAS to calculate mean exposure to SEA per individual (used to create a continuous

variable) (Cabalatungan & McCarthy, 2015), with others calculating item specific prevalence rates (Langley, Kypri & Stephenson, 2003), prevalence rates for students experiencing multiple SEA (Wechsler & Lee, 2001), or for descriptive purposes (Longo, 2019). In this study, SEA data was handled in two ways: 1) dichotomized to "any" vs. none with SEA as a binary predictor, and 2) a total score for the 10 SEA items was calculated. Direct effect of alcohol use was calculated using both the AUDIT and heaviest day of drinking to assess the effect of typical and heavy use.

Hypothesis 1. Alcohol use is known to be a highly skewed count variable (Neal & Simons, 2007). Recent simulation research has shown that quasi-Poisson (QP) regression models are the most robust to distributional characteristics of skewed count data in the addiction field, outperforming even the commonly used negative binomial regression models (Baggio et al., 2018). QP regression models are quasi-likelihood regression models that when used in the context of alcohol use outcomes, allow for highly skewed and over dispersed count distributed data to be modeled appropriately. A Quasi-Poisson (QP) regression was conducted with SEA predicting alcohol use. SEA was scored on a continuous scale.

Hypothesis 2. An ordinary least squares (OLS) regression model was conducted with SEA predicting wellbeing. Wellbeing was scored on a continuous scale and was normally distributed.

Hypothesis 3. An OLS regression was conducted with alcohol use predicting wellbeing. Wellbeing was scored on a continuous scale and was normally distributed and there were no assumptions made about the distribution of predictor variables in regression analysis.

Hypothesis 4. An OLS regression was conducted with adaptive coping predicting wellbeing. Wellbeing was scored on a continuous scale and was normally distributed and there were no assumptions made about the distribution of predictor variables in regression analysis.

Hypothesis 5. A path analysis was conducted to test the study hypothesis that wellbeing is predicted by SEA indirectly via alcohol use. The skewed count mediator was handled using Bayesian estimation due to Mplus' inability to analyze mediators using a QP regression (Muthén & Muthén, 1998-2012). The challenge in conducting accurate determinations regarding the strength of an indirect effect is that the product of two regression slopes is not normally distributed. Traditional approaches to testing mediation (e.g., the Sobel Test) violate the normality assumption which leads to a loss of statistical power (Hayes, 2009). To bypass this issue, the best approach is to assess asymmetrical confidence intervals (ACIs) that best represent the true distribution of the product of coefficients. ACIs that are considered to be statistically significant are those that do not contain zero. For the proposed study, Bayesian estimation accommodated the violation of the normality assumption by estimating the distribution of non-normal products of regression coefficients directly from the data (i.e., the a-path * the b-path) by repeatedly sampling data to create an accurate estimation of the effect with Bayesian Credible Intervals, which are asymmetrical (Muthén & Asparouhov, 2012). Bayesian Credible Intervals provide a more robust test of the statistical test by allowing for individual level variability in the intercepts and slopes (Gelman, Carlin, Stern & Rubin, 2004). Thus, I analyzed the indirect effects of each predictor variable on outcomes using Bayesian Credible Intervals (Gelman et al., 2004), which provided a powerful test of mediation.

Hypothesis 6. A Quasi-Poisson (QP) regression was conducted with SEA predicting alcohol related consequences. Alcohol related consequences were scored on a continuous scale. Controlling for personal alcohol use.

Hypothesis 7. A multiple generalized linear regression was used to test the moderation hypothesis. The moderation hypothesis was tested by adding adaptive coping as a moderator of

the direct effect of SEA to alcohol related consequences. Recent literature suggests that when analyzing interaction effects in count and probability dependent variables, as in generalized linear models (GLM), with product terms is inappropriate because interaction effects are functions of the predictor model rather than the product terms between the predictor variables (McCabe et al., 2020). Using GLM product term coefficients to estimate interaction effects may result in errors in inference when estimating the interaction effects on natural scales (McCabe et al., 2020). In order to properly estimate interaction effects for probability and count dependent variables, McCabe et al., (2020) recommend interpreting interactions as "change in a marginal effect of one variable as a function of change in another variable" (pg.1) use of partial derivatives and discrete differences to quantify the effects. Because predictor and moderators were both continuous in the present study, McCabe et al., (2020) recommended the second-order cross partial derivative approach (Ai & Norton, 2003). These approaches account for the non-linear nature of GLMs and allow for the detection of interaction effects in the absence of a product term. In fact, McCabe and colleagues (2020) point out that even in linear models, the fact that the product term provides a test of moderation is a special case, but over time has led the field astray to think that product terms are synonymous with interactions. However, they note that in GLMs that use a log link function, e.g., QP regressions, the unstandardized logit of the product term can be interpreted because the effects are linear in the exponents, but importantly, they cannot be exponentiated to transform the product effects back to the natural count scale as can be done with direct effects. Finally, McCabe et al., (2020) strongly recommend using data visualizations to aid in the interpretation of moderations.

Hypothesis 8. A multiple regression was used to test the moderation hypothesis. The moderation hypothesis was tested by adding maladaptive coping as a moderator of the direct

effect of SEA to alcohol related consequences. The interaction was further explored using recommendations by McCabe et al., (2020).

Demographic Variables. Demographic variables for sex, race, ethnicity, and sexual orientation were tested against all outcome variables (consequences, wellbeing, heavy drinks, and audit) to assess for systematic differences using independent samples t-tests. When group differences were identified, demographic variables were added to subsequent regression models to control for these differences.

Pre & During COVID-19 analyses. Due to the administration of the study during the COVID-19 pandemic, analyses were run with measures assessing participants current and pre-COVID-19 responses. Results from these analyses were not formally presented but were commented on in the discussion to reduce redundancy see page 38.

Results

Tables 1- 4 present regression results. Table 1 presents results from three multivariate GLMs (heavy drinks to SEA, AUDIT to SEA & Consequences to SEA and heavy drinks). Outcomes are number of drinks on one's heaviest day of drinking and AUDIT score. Numbers in tables 1 and 4 present results from the GLMs, are rate ratios which are calculated by exponentiating the unstandardized coefficients (logits) and the 95% confidence intervals (CI) are in parentheses. CI intervals around rate ratios are significant if they do not contain 1. Table two presents results from four bi-variate linear regressions, all of which have psychological wellbeing as the outcome variable. Predictors in this table are SEA, heavy drinks, AUDIT, and Adaptive Coping. Numbers are unstandardized βs, the recommended cutoff for β are .1 for small effects, .3 for moderate effects, and .5 for large effects. CI presented in parentheses for linear models are significant if they do not contain 0. Table three presents results from a path analysis with the top section of the table showing the direct effects, and the bottom portion of the table presenting indirect effects. Indirect effects were calculated as the product of the A (SEA to Alcohol Use) & B (Alcohol Use to Wellbeing) path. Significance was calculated with Bayesian credible intervals that did not contain 0. Table 4 presents two GLMs both with alcohol related consequences as the outcome. The first model looked at direct and interactive effects of SEA and adaptive coping predicting consequences. The second model looked at the direct and interactive effects of SEA and maladaptive coping predicting consequences. Numbers in the table are unstandardized regression coefficients (logits) with 95% CIs. Significance is determined with CI that do not contain 0. Estimates were not exponentiated as recent methodological paper (McCabe

et al., 2020) suggested not to exponentiate GLM models with interaction terms. This table is supplemented with text below and with 5 and 6.

Hypothesis 1. Experiencing more SEA while controlling for sex and race significantly and positively predicted the number of reported drinks on participants heaviest drinking day (*RR* = 1.05, *SE* = 0.005, $p<.01$), such that a one unit increase in SEA was associated with 5% more reported drinks on the heaviest drinking day, controlling for binary sex and race, both of which significantly predicted heavy drinks. Experiencing more SEA while controlling for sex, race, and ethnicity significantly and positively predicted AUDIT score (*RR* = 1.04, *SE* = .005, $p<.01$), such that a one unit increase in SEA was associated with a 4% increase in AUDIT score, controlling for binary sex, race, and ethnicity. See Table 1.

Table 1

Generalized Linear Models with Direct Effects

	Dependent variable:		
	Heavy Drinks	AUDIT	ARC
	RR (95% CI)	RR (95% CI)	RR (95% CI)
SEA	1.05***	1.04***	1.06***
	(1.04, 1.06)	(1.03, 1.05)	(1.04, 1.07)
Controlling for Sex	0.65***	0.80***	
	(0.53, 0.77)	(0.69, 0.90)	
Controlling for Ethnicity		1.29***	
		(1.14, 1.44)	
Controlling for Race	1.29***	1.35***	
	(1.11, 1.47)	(1.19, 1.51)	
Heavy Drinks			1.09***
			(1.08, 1.10)
Intercept	3.82***	2.11***	1.65***
	(3.64, 4.01)	(1.91, 2.31)	(1.56, 1.75)
Significance levels		*p<0.1; **p<0.05; ***p<0.01	

Note. AUDIT = Alcohol Use Disorders Identification Test; ARC = Alcohol Related Consequences; SEA = Secondhand Effects of Alcohol; RR = rate ratio; CI = confidence interval. Confidence Intervals are in parenthesis.

Hypothesis 2. Experiencing SEA did not significantly predict psychological wellbeing. See Table 2.

Hypothesis 3. Neither drinks on heaviest drinking day nor AUDIT score significantly predicted wellbeing. See Table 2.

Hypothesis 4. Adaptive coping significantly and positively predicted wellbeing (b = 0.19, 95% CI = 0.04, 0.35). See Table 2.

Table 2

Linear Models

	Dependent variable:			
	Wellbeing			
	b (95% CI)	b (95% CI)	b (95% CI)	b (95% CI)
SEA	-0.12			
	(-0.38, 0.13)			
Heavy Drinks		-0.20		
		(-0.44, 0.04)		
AUDIT			0.08	
			(-0.33, 0.48)	
Adaptive Coping				0.19**
				(0.04, 0.35)
Intercept	157.92***	158.06***	156.95***	150.77***
	(156.43, 159.41)	(156.54, 159.59)	(155.14, 158.75)	(145.54, 156.00)
R^2	0.001	0.003	0.0002	0.01
Adjusted R^2	-0.0001	0.002	-0.001	0.01
Residual Std. Error	16.43 (df = 868)	16.48 (df = 882)	16.98 (df = 858)	16.84 (df = 852)
F Statistic	0.90 (df = 1; 868)	2.61 (df = 1; 882)	0.14 (df = 1; 858)	6.18** (df = 1; 852)
Significance levels				*p<0.1; **p<0.05; ***p<0.01

Note. AUDIT = SEA = Secondhand Effects of Alcohol; Alcohol Use Disorders Identification Test; CI = confidence interval. Confidence Intervals are in parenthesis.

Hypothesis 5. Alcohol use did not significantly mediate the relationship between SEA and wellbeing (Indirect effect = -0.006, Bayesian Credible Interval = -0.041, 0.03). See Table 3.

Table 3

Path Analysis of Direct and Indirect Effects

Path	*b estimates*	*SE (b)*	*p-values*
Wellbeing on SEA	-0.119	0.186	0.520
Wellbeing on Heavy Drinks	-0.018	0.051	0.722
Heavy Drinks on SEA	0.314	0.077	0.000

	b estimates	*LB-BCI*	*UB-BCI*
Indirect Effect	-0.006	-0.041	0.026

Note: SEA = Secondhand Effects of Alcohol; LB-BCI = Lower bound Bayesian confidence intervals; UB-BCI = Upper bound Bayesian confidence intervals; SE = standard error.

Hypothesis 6. Experiencing more SEA significantly and positively predicted alcohol related consequences (*RR* = 1.06, *SE* = .005, *p*<.01), such that a one unit increase in SEA was associated with 6% more alcohol related consequences. See Table 1.

Hypothesis 7. The product term between adaptive coping and SEA was not significant in the model predicting alcohol related consequences (*b* = .001, *SE* = .001, *p* = .53). However, visual inspection of the interaction plot (Figure 6) revealed low and high levels of adaptive coping had a stronger relationship between SEA and alcohol related consequences compared to moderate levels of adaptive coping. In addition, there was a significant direct effect for heavy drinks predicting alcohol related consequences (*RR* = 1.09, *SE* = .004, *p* <.01), such that each additional drink on one's heaviest drinking day was associated with 4% more alcohol related consequences. All other direct effects were not significant see Table 4. There was a non-significant average interaction in the sample between SEA and adaptive coping (γ^2 = < .01, 95% CI = [-0.004, 0.004]), as 0 was included in the CI. The interaction effect ranged from about -.006 to .0006 in the sample. A total of 0% of these were significant positive effects. Taken together,

despite the visual representation of the interaction effect that suggested some mild differences, all numerical results indicated that there was little to no evidence for an interaction effect.

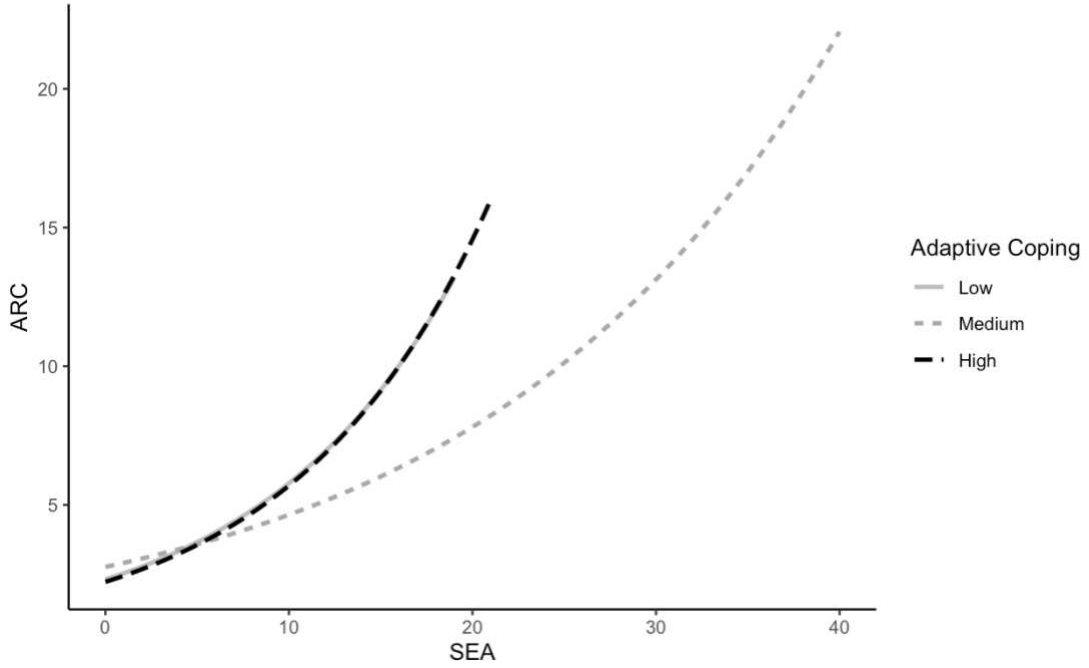


Figure 6

Note. Secondhand Effects predicting Consequences moderated by Adaptive Coping**.**ARC = Alcohol related consequences; SEA = Secondhand Effects of Alcohol. The plotted relationship between SEA and consequences at low medium and high levels of adaptive coping following recommendations by McCabe et al., (2020).

Hypothesis 8. The product term between maladaptive coping and SEA significantly predicted alcohol related consequences (b = -.002, SE = .001, p = .05). Visual inspection of the interaction plot (Figure 7) revealed that individuals with high levels of maladaptive coping had more alcohol related consequences. Individuals with medium and high levels of maladaptive coping had a stronger relationship between SEA and alcohol related consequences compared to low levels of maladaptive coping. There was a significant average interaction in the sample between SEA and maladaptive coping (γ^2 = -0.007, 95% CI = [-0.01, -0.003]), as 0 was not included in the CI. The interaction ranged from about -.21 to .004 in the sample. A total of 75%

of these were significant positive effects. See table 4. Taken together, all evidence points to a significant interaction effect that is best captured by the visual presentation of the data.

Based on the findings that maladaptive coping was a significant moderator of SEAs relationship with alcohol related consequences, an additional analysis was conducted to assess whether substance use specific coping would also moderate the relationship. The product term between substance use specific coping (items 4 & 11 on the brief COPE) and SEA significantly predicted alcohol related consequences (b = -.01, SE = .003, p = .01). Visual inspection of the interaction plot (Figure 8) revealed that individuals with high levels of substance use coping had more alcohol related consequences and had a stronger relationship between SEA and alcohol related consequences compared to those with low and medium levels of substance use coping. There was a significant average interaction in the sample between SEA and substance use coping (γ^2 = -0.011, 95% CI = [0.001, 0.022]), as 0 was not included in the CI. The interaction ranged from about -.45 to .02 in the sample. A total of 74% of these were significant positive effects.

Table 4

Generalized Linear Models with Interactions

	Dependent variable:	
	ARC	
	b (95% CI)	b (95% CI)
SEA	0.04	0.10***
	(-0.03, 0.10)	(0.05, 0.16)
Adaptive Coping	-0.002	
	(-0.01, 0.01)	
Maladaptive Coping		0.04***
		(0.03, 0.06)
Heavy Drinks	0.09***	0.09***
	(0.08, 0.10)	(0.08, 0.10)
SEA X Adaptive Coping	0.001	
	(-0.001, 0.002)	
SEA X Maladaptive Coping		-0.002**
		(-0.004, -0.0001)
Intercept	0.57**	-0.65***
	(0.13, 1.01)	(-1.03, -0.28)
Significance levels	*p<0.1; **p<0.05; ***p<0.01	

Note: ARC = Alcohol related consequences; SEA = Secondhand Effects of Alcohol; CI = confidence intervals. Numbers represent unstandardized regression coefficients (logits), and 95% Confidence Intervals are in parenthesis.

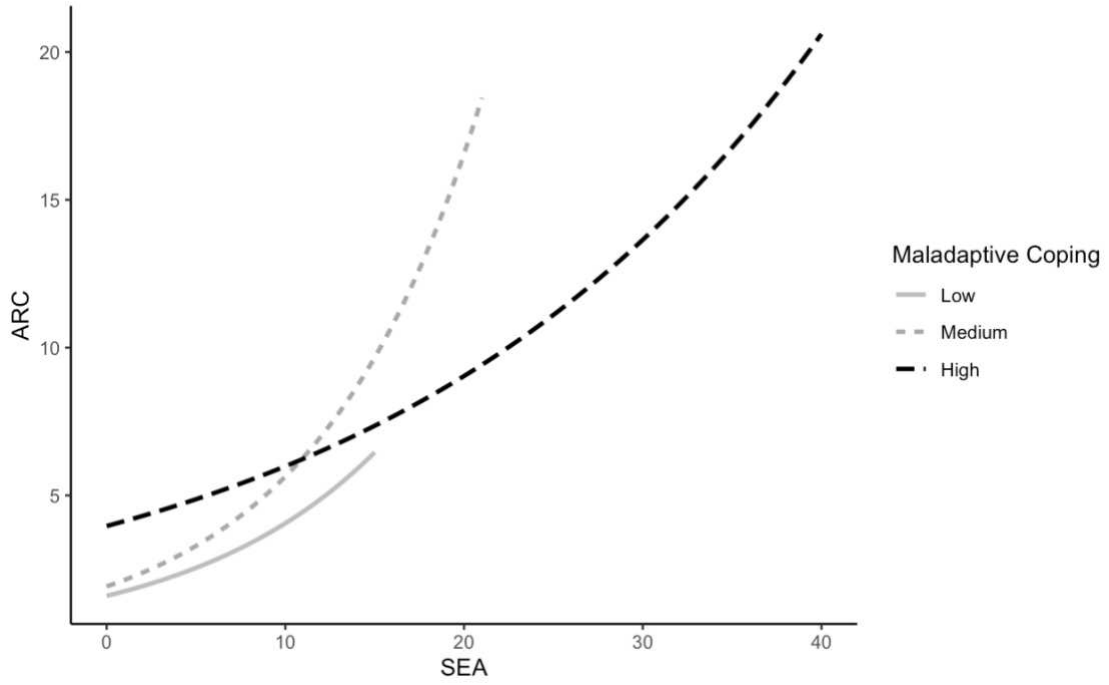


Figure 7

Note. Secondhand Effects predicting Consequences moderated by Maladaptive Coping**.** ARC = Alcohol related consequences; SEA = Secondhand Effects of Alcohol. The plotted relationship between SEA and consequences at low medium and high levels of maladaptive coping following recommendations by McCabe et al., (2020). The line that represents low levels of maladaptive coping is short due to individuals in this category reporting low levels of SEA and consequences.

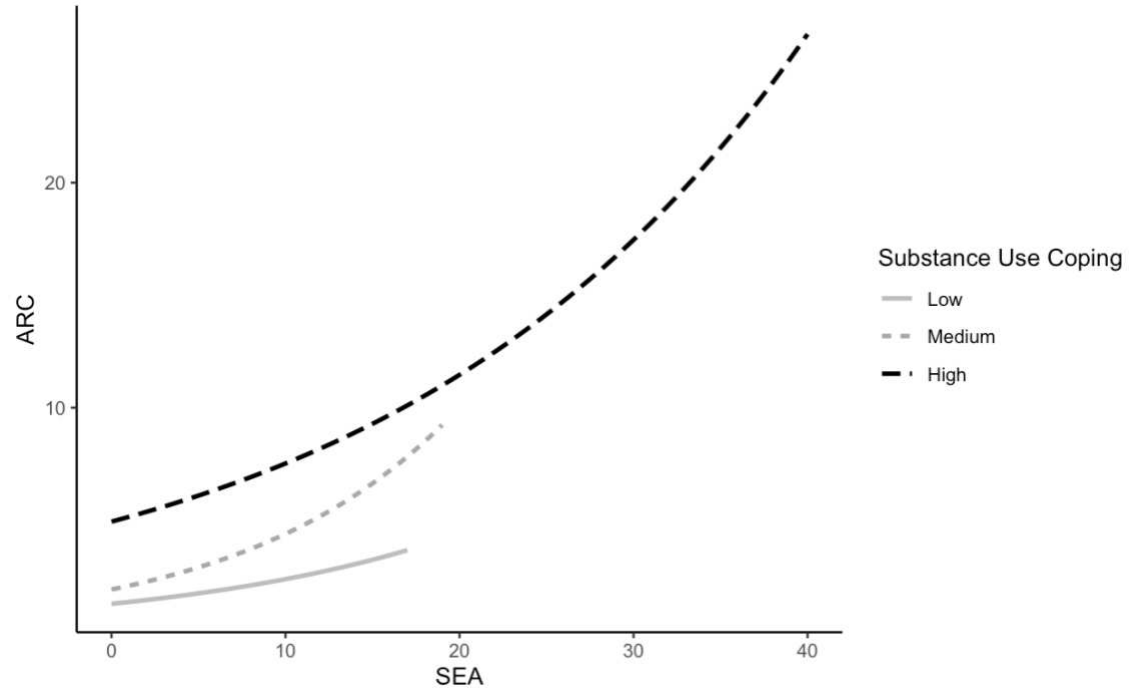


Figure 8

Note. Secondhand Effects predicting Consequences moderated by Substance Use Coping. ARC = Alcohol related consequences; SEA = Secondhand Effects of Alcohol. The plotted relationship between SEA and consequences at low medium and high levels of substance use coping following recommendations by McCabe et al., (2020). The lines that represent low and medium levels of substance use coping are short due to individuals in these categories reporting low levels of SEA and consequences.

Demographic Variables. A majority of participants in this sample identified as white (*n* = 876; 84%), Non-Hispanic (*n* = 839; 81%), and Female (*n* = 806; 73%). Tables 5-7 present demographic tables for sex, race, and ethnicity which were all found to be significant predictors of outcome variables. Demographic variables with significant group differences on study outcomes were grouped into dichotomous variables, i.e., sex = male & female, race = non-white & white, and ethnicity = Hispanic or Latinx & not Hispanic or Latinx. Sex differences were identified for heavy drinks and AUDIT with male participants reporting more drinks on their heaviest day of drinking as well as higher AUDIT score (see table 5). Race differences were

identified for heavy drinks and AUDIT with white participants reporting more drinking on their heaviest day of drinking as well as higher AUDIT score (see table 6). Ethnicity differences were identified for heavy drinks and AUDIT with non-Hispanic or Latinx participants reporting higher AUDIT score (see table 7). Sex, race, and ethnicity were controlled for in hypothesis 1 analyses where they significantly predicted outcome variables of AUDIT score and heaviest day of drinking. There were no demographics differences for alcohol related consequences or wellbeing.

Table 5

Demographic Differences by Sex

Characteristic	**Male**, N = 305	**Female**, N = 806	**p-value**[1]
Secondhand Effects of Alcohol, Mean (SD)	4.3 (4.6)	4.0 (4.4)	0.4
Missing	16	45	
ARC, Mean (SD)	3.7 (4.6)	3.6 (4.2)	0.9
Missing	20	34	
AUDIT, Mean (SD)	4.03 (3.18)	3.31 (2.67)	0.004
Missing	32	63	
Heavy Drinks, Mean (SD)	5.8 (5.9)	4.0 (3.8)	<0.001
Missing	13	37	
Wellbeing, Mean (SD)	157 (20)	157 (16)	>0.9
Missing	59	148	
Adaptive Coping, Mean (SD)	33 (7)	34 (7)	0.3
Missing	41	102	
Maladaptive Coping, Mean (SD)	25 (7)	27 (7)	0.018
Missing	44	100	

[1] Wilcoxon rank sum test

Note. Table 5 shows variable differences by sex. All differences are insignificant except for in Heavy Drinks and AUDIT. Significant differences were controlled for in models with Heavy Drinks and AUDIT as outcomes. AUDIT = Alcohol Use Disorders Identification Test; ARC = Alcohol Related Consequences.

Table 6

Demographic Differences by Race

Characteristic	NonWhite, N = 169	White, N = 876	p-value[1]
Secondhand Effects of Alcohol, Mean (SD)	3.1 (3.4)	4.2 (4.6)	0.005
Missing	8	51	
ARC, Mean (SD)	3.4 (4.6)	3.6 (4.2)	0.087
Missing	11	43	
AUDIT, Mean (SD)	2.50 (2.56)	3.69 (2.85)	<0.001
Missing	18	72	
Heavy Drinks, Mean (SD)	3.5 (4.7)	4.7 (4.6)	<0.001
Missing	12	38	
Wellbeing, Mean (SD)	160 (18)	157 (17)	0.035
Missing	43	146	
Adaptive Coping, Mean (SD)	33 (8)	33 (7)	0.6
Missing	34	102	
Maladaptive Coping, Mean (SD)	27 (7)	26 (7)	0.2
Missing	31	106	

[1] Wilcoxon rank sum test

Note. Table 6 shows variable differences by race. All differences are insignificant except for in Heavy Drinks and AUDIT. Significant differences were controlled for in models with Heavy Drinks and AUDIT as outcomes. AUDIT = Alcohol Use Disorders Identification Test; ARC = Alcohol Related Consequences.

Table 7

Demographic Differences by Ethnicity

Characteristic	**Hispanic or Latinx**, N = 193	**Not Hispanic or Latinx**, N = 839	**p-value**[1]
Secondhand Effects of Alcohol, Mean (SD)	3.6 (4.6)	4.1 (4.4)	0.2
Missing	14	43	
ARC, Mean (SD)	3.5 (4.4)	3.6 (4.2)	0.7
Missing	8	44	
AUDIT, Mean (SD)	2.83 (2.59)	3.67 (2.86)	<0.001
Missing	18	71	
Heavy Drinks, Mean (SD)	4.2 (4.1)	4.5 (4.7)	0.7
Missing	7	39	
Wellbeing, Mean (SD)	156 (18)	157 (16)	0.9
Missing	48	138	
Adaptive Coping, Mean (SD)	33 (8)	33 (7)	0.8
Missing	22	106	
Maladaptive Coping, Mean (SD)	27 (7)	26 (7)	0.13
Missing	26	103	

[1] Wilcoxon rank sum test

Note. Table 7 shows variable differences by ethnicity. All differences are insignificant except for in AUDIT. Significant differences were controlled for in models with AUDIT as an outcome. AUDIT = Alcohol Use Disorders Identification Test; ARC = Alcohol Related Consequences.

Discussion

In this study I discovered three critical findings regarding SEA. Specifically, I found that those who experienced more SEA had higher levels of alcohol use compared to those who reported low levels of SEA. Next, I found that those who reported experiencing higher levels of SEA also reported experiencing more alcohol related consequences. Finally, I found that maladaptive coping moderated the relationship between SEA and alcohol related consequences, such that those who were subjected to higher levels of SEA also engaged in more maladaptive coping and experienced more alcohol related consequences. This finding is concerning as alcohol related consequences may include outcomes such as adverse physical and mental health outcomes, poorer academic achievement, or even death in extreme cases (NIH, 2020). The latter inference is further explained below.

To follow up on this finding, I explored specific items from the brief COPE. In these analyses, I found that the relationship between SEA and alcohol related consequences was significantly moderated by substance use specific coping such as drinking to cope. This indicates that individuals who experience more SEA may use alcohol to cope with the experience of SEA, and that this specific type of maladaptive coping is associated with increased alcohol related consequences.

While demographic differences in outcomes were present in this study, differences were consistent with findings from previous literature regarding use patterns. Recent research has shown female identifying individuals reporting lower personal alcohol use than male identifying individuals (Park et al., 2021), and white, non-Hispanic individuals report higher levels of personal use than their peers (Substance Abuse and Mental Health Services Administration

[SAMHSA], 2020). When sex, race, and ethnicity were controlled for in alcohol related outcomes there was no change in the patterns of significance in the models. Therefore, I am confident that the results from my hypothesis tests were robust to differences in outcomes based on demographic variables.

In the remainder of this discussion, I further explore supported and unsupported hypothesis and provide implications of findings, clinical steps which could be taken to address these findings, and suggestions for research in this area going forward. Supported hypotheses involve the relationships between SEA, personal alcohol use, alcohol related consequences, and maladaptive coping. Unsupported hypotheses were those which involve SEAs relationship with wellbeing via direct and indirect effects and SEAs relationship with adaptive coping.

Supported Hypotheses. I found support for hypotheses involving SEA and negative outcomes including higher SEA being associated with increased personal use and alcohol related outcomes. Further, I found support for the hypothesis that higher rates of SEA were related to higher levels of personal alcohol use. This finding was consistent with existing literature on SEA and ultimately added to this literature base by replicating previous findings (Boekeloo et al., 2009; Stiles & Rice, 2019; Wechsler et al., 1995).

I posited and found evidence for a positive relationship between adaptive coping and wellbeing which also is consistent with findings from previous research (Fox, Neha & Jose, 2018). This finding suggests that individuals who cope with stressors in an adaptive way have higher levels of wellbeing, which has been linked to positive health behaviors such as an increased ability to resist social pressures (Ryff, 2014). Utilizing adaptive coping skills and having high wellbeing may be an important factor in moderating alcohol use through the ability to resist social pressures such as peer use.

Additionally, I found that SEA was significantly related to alcohol related consequences while controlling for personal use. These findings extend the previous literature which demonstrated an association between SEA and personal use (Boekeloo et al., 2009; Stiles & Rice, 2019; Wechsler et al., 1995), to alcohol related consequences. These findings indicate that those with higher levels of SEA are engaging alcohol use that is associated with consequences at a higher rate compared to those with lower levels of SEA. One implication of these results is that prevention and intervention scientists could use the SEAQ as a screening tool to identify those in greatest need for prevention programs and interventions to help reduce the risk of unwanted alcohol related consequences. Further, as the SEAQ is a relatively brief inventory, it is amenable for use as a screening tool that can be used for identification and referral purposes.

Analyses of coping strategies in this study build on the previous result by establishing maladaptive coping as a moderator between SEA and alcohol related consequences. Further, in exploring specific forms of maladaptive coping, I found that substance use specific maladaptive coping was a significant moderator for SEAs relationship to alcohol related consequences. This is supported by literature which posits that some college student alcohol use is motivated by the need to diminish negative emotions or reduce distress (Read et al., 2006). Drinking to cope is ultimately a maladaptive coping strategy and rather than decrease negative emotions is often related to harmful use patterns and increased stress (Cooper, Russell, Skinner, Frone & Mudar, 1992; Corbin, Farmer & Nolen-Hoekesma, 2013; Hasking, Lyvers & Carlopio, 2011). These results may explain why those experiencing SEA report more negative alcohol related consequences as they appear to be engaging in substance use as a form of coping which ultimately causes more harm. These findings, taken together, indicate that the way in which those experiencing higher levels of SEA cope may lead to increased consequences. To combat

this harmful outcome, clinicians might utilize interventions which focus on developing adaptive coping through modalities such as cognitive behavioral therapy (CBT), or provide psychoeducation on the harmful effects of maladaptive coping.

Unsupported Hypotheses. I failed to find support for hypotheses which looked to connect SEA to lower levels of wellbeing or for adaptive coping as a moderator between SEA and wellbeing. One possible explanation for this outcome is that students may not perceive more commonly endorsed SEA (i.e., study/sleep interrupted, having to take care of a drunken student) as stressful events. This is supported by recent studies which found students' personal attitudes towards SEA (PATSEA) were less disapproving when the SEA was perceived as "less severe" or casual (Longo, 2019). Future studies may combat this by separating SEA by perceived severity. Longo (2019) found evidence to support separating SEA into causal SEA (items 5,6,7,8) and serious SEA (items 1,2,3,4,9,10). Separating SEA by perceived severity may allow researchers to disseminate whether more serious SEA negatively effects wellbeing.

An unexpected finding in this study was that higher levels of personal alcohol use did not predict lower wellbeing. This finding may be supported by theories which posit that students' motives for use may be to increase social engagement or follow peer norms (Read et al., 2006). Studies which have explored the alternative hypothesis as proposed in this study, examined whether alcohol use may be beneficial socially and therefore positively effect wellbeing (Geiger & MacKerron, 2016; Mason & Spoth, 2011). Geiger & MacKerron (2016) found that while individuals reported increased momentary happiness while drinking, alcohol use did not significantly increase long term wellbeing with implications that alcohol use was not an adequate predictor of wellbeing despite social benefits (Geiger & MacKerron, 2016). Similarly, Mason and Spoth (2011) proposed a positive relationship between alcohol use and wellbeing but instead

found an inverse relationship, with wellbeing predicting alcohol use. To explain this finding Mason and Spoth (2011) theorized that engagement in social drinking required a certain level of social skill and connectedness and therefore those with higher wellbeing were more likely to engage in social drinking. Both studies highlight the benefits of drinking for social engagement which may help to explain the non-significant interaction between alcohol use and decreased wellbeing in this study. Compared against the findings from this study, it is possible that while those who drink are at higher risk for alcohol related consequences, these consequences are in some way balanced by the beneficial effect of drinking for social engagement. Future studies should explore motives for use in relation to wellbeing to better understand how different motives may strengthen or weaken the relationship between use and wellbeing. Additionally, studies should expand on the work done by Mason and Spoth (2011), by replicating the positive relationship between high wellbeing and increased use.

The lack of significance of these interactive effects (i.e., SEA to Wellbeing & Alcohol Use to Wellbeing) was further established when alcohol use did not mediate the relation between SEA and wellbeing. These three separate findings indicate that in this sample SEA and the resulting increased alcohol use, did not significantly impair student's wellbeing. As I conducted this study during the COVID-19 pandemic it is possible that due to person-to-person restrictions, students may have experienced less or different forms of SEA than in a typical semester where they would be living, taking classes, and interacting socially with their peers. The restrictions in person-to-person contact may have resulted in fewer instances of SEA which may explain why SEA did not affect wellbeing in this sample. In addition, it is currently unknown how the pandemic has affected alcohol use patterns. However, several recent studies have projected increases in alcohol use due to isolation and feelings of distress caused by the pandemic (Clay &

Parker, 2020; Rehm et al., 2020). Therefore, it is possible that student alcohol use was unrelated to experiences of SEA and was instead used to cope with pandemic related stressors which may explain why SEAs relationship to wellbeing was not mediated by alcohol use.

Finally, an exploratory aim in which I hypothesized that the relationship between SEA and alcohol related consequences would be moderated by adaptive coping was found to be unsupported. This result was surprising as this study found that individuals with high levels of maladaptive coping had a stronger relationship between SEA and alcohol related consequences, however holding higher levels of adaptive coping did not weaken the relationship. In visualizing the data, those with moderate levels of adaptive coping had a weaker relationship between SEA and alcohol related consequences compared to those with low and high levels of adaptive coping. It is possible that those with the highest levels of adaptive coping are engaging coping behaviors because they are experiencing high levels of distress which activates their need to cope. If participants are experiencing high levels of distress, it is possible that adaptive coping isn't enough to moderate SEAs effect on alcohol related consequences. To test this theory, additional research should assess whether adaptive coping moderates the relationship between SEA and alcohol related consequences while controlling for levels of distress (Lovibond & Lovibond, 1995).

In summary, there are several proposed explanations for the unsupported hypotheses in this study. Some forms of SEA may be viewed as normative and therefore are not interpreted as a stressful event leading to decreased wellbeing. While alcohol use can lead to negative consequences, it can also be motivated by social interactions which may be beneficial to wellbeing, meaning that alcohol use alone does not negatively affect wellbeing. Administration of the survey during the COVID-19 pandemic may have affected not only the rate of SEA but

motives for use, weakening any preexisting relationship between SEA, alcohol use, and wellbeing. Finally, Individuals with high levels of adaptive coping are engaging in coping to manage high levels of distress, and adaptive coping alone is not enough to weaken the relationship between SEA and alcohol related consequences.

Strengths. A strength of this study is the use of state of the science methodological approaches such as QP regressions, Bayesian credible intervals, and the use of second-order cross partial derivatives to analyze interactions in GLM. While other statistical models are more commonly used, such as negative binomial regression in alcohol count data, research has found that these models may not be accurately representing data (Baggio et al., 2018). Specifically, negative binomial regressions are not robust against outliers which are often present in substance use research (Baggio et al., 2018), Sobel Tests violate normality assumptions (Hayes, 2009), and GLM product term coefficients are not an appropriate estimation of interaction effects (McCabe et al., 2020). Using modern data analyses allowed me to appropriately model alcohol use outcomes, maintain statistical power, and avoid errors in inference.

Another important strength of this study was the extension of established SEA literature specifically in how SEA interacts with alcohol related consequences and maladaptive coping. My findings are important because they establish that individuals who experience SEA as being at increased risk for consequences compared to their peers who experience less or no SEA. Establishing maladaptive coping and substance use specific coping as an important factor in the relationship between SEA and alcohol related consequences helps to explain why individuals are experiencing more consequences. In addition, this finding provides insight into the behaviors (drinking to cope) that can be targeted in clinical interventions to weaken the relationship between SEA and consequences.

Finally, my ability to replicate previous findings in the literature regarding wellbeing and alcohol use patterns is important in that it works to combat the current replication crisis in psychology. Analyses of the current replication crisis in psychology identifies two main problems in our current approach to replicability: 1. Direct replication is undervalued and is rarely published, meaning that we often lack true replication of established findings. 2. Simmons, Nelson, and Simonsohn (2011) published a paper outlining widespread questionable research practices (QRP) in the current literature base which led researchers to call for replication of existing research simply to prove the credibility of previous findings (Wiggins & Chrisopherson, 2019). While this study does not provide direct replicability, the replication of previous findings in a new sample (Adaptive Coping to Wellbeing & SEA to Alcohol use) using state of the science methodological approaches lends additional support to previous findings.

Pre-COVID-19 Data. Given that the pandemic likely altered many facets of participants lives, participants were asked to respond to each question in the survey twice, once to account for their current state and the second to estimate how they may have felt or behaved prior to the start of the pandemic (defined as prior to March 2020). Patterns of significance were the same for all hypotheses except for hypothesis 2 which posited that those who experienced more SEA would report lower wellbeing and was previously found to be non-significant. Analysis of hypothesis 2 with self-reported pre COVID-19 data indicated that SEA had a significant negative effect on wellbeing (b = -0.45, 95% CI = -0.71, -0.19; see table 8). Table 8 presents results from two bi-variate linear regressions, which have wellbeing and pre-COVID-19 wellbeing as outcome variables. Predictors in table 8 are SEA, and Pre-Covid SEA. It is possible that this finding may be explained by changes in the way SEA or wellbeing were experienced prior to COVID-19. In support of this theory, item level analysis of the SEAQ comparing current SEA to pre-COVID-

19 SEA showed that participants had higher mean scores for all but three items (items 6, 7, & 8) pre-COVID-19 (see table 9). Interestingly, items which had higher mean scores pre-COVID-19 were SEAs which Longo (2019) had identified as causal. Higher mean scores on causal SEAs pre-COVID-19 may indicate that SEAs are perceived differently in non-pandemic settings. In item level analysis of the PWB comparing current wellbeing to pre-COVID-19 wellbeing, results showed that participants had higher mean scores for current wellbeing, which may provide further evidence for a relationship between higher levels of SEA pre-COVID-19 and lower wellbeing pre-COVID-19.

While these findings provide informative data regarding SEA, it is important to note that self-report data relies on participant insight into behaviors as well as participant recall. A meta-analysis of self-report recall reliability found that recall of risky behaviors was acceptable at 6 months (Napper et al., 2010), however recall at 3 months or less was preferred for accurate interpretation. In the present study data was collected from October 2020-December 2020 meaning participants were asked to recall behaviors which occurred at least 7 months prior. Given the limitations surrounding these findings inferences are limited to the speculation that difference in significance between current and pre-covid responses indicate reduced experiences of SEA. Additional research is needed to disseminate whether SEA negatively effects wellbeing outside of pandemic restrictions, or if the change in significance is better explained by measurement error.

Table 8

Linear Models of Current & Pre-Covid Wellbeing and SEA

	Dependent variable:	
	Wellbeing b (95% CI)	Pre-Covid Wellbeing b (95% CI)
SEA	-0.12 (-0.38, 0.13)	
Pre-Covid SEA		-0.45*** (-0.71, -0.19)
Constant	157.92*** (156.43, 159.41)	156.39*** (154.81, 157.98)
R^2	0.001	0.01
Adjusted R^2	-0.0001	0.01
Residual Std. Error	16.43 (df = 868)	17.62 (df = 826)
F Statistic	0.90 (df = 1; 868)	11.84*** (df = 1; 826)
Significance levels		*p<0.1; **p<0.05; ***p<0.01

Note. AUDIT = SEA = Secondhand Effects of Alcohol; CI = confidence interval. Confidence Intervals are in parenthesis.

Table 9

Item level analysis of the SEAQ

Secondhand Effects of Alcohol	Current, Mean (SD)	Pre-Covid, Mean (SD)
Been insulted or humiliated	.36 (75)	.43 (.76)
Had a serious argument or quarrel	.42 (.74)	.47 (.77)
Been pushed, hit, or assaulted	.12 (.41)	.15 (.46)
Had your property damaged	.15 (.47)	.18 (.51)
Had to "baby-sit" or take care of another student who drank too much	.91 (.96)	.95 (.98)
Found vomit in the halls or bathroom of your residence	.43 (.82)	.36 (.77)
Had your studying interrupted	.67 (1.07)	.60 (1.03)
Had your sleep interrupted	.82 (1.10)	.69 (1.06)
Experienced an unwanted sexual advance	.18(.51)	.23 (.60)
Been a victim of sexual assault or 'date-rape'	.06 (.29)	.09 (.38)

Note: Table 9 shows mean and SD differences of the SEAQ items with current and pre-COVID-19 data. SEA = Secondhand Effects of Alcohol; SD = standard deviation.

Table 10

Item level analysis of the PWB

Psychological Wellbeing	Wellbeing, Mean (SD)	Pre-Covid Wellbeing, Mean (SD)
I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.	4.3 (1.5)	4.1 (1.6)
In general, I feel I am in charge of the situation in which I live.	4.4 (1.5)	4.4 (1.5)
I am not interested in activities that will expand my horizons.	2.1 (1.4)	2.2 (1.4)
Most people see me as loving and affectionate.	4.8 (1.3)	4.7 (1.3)
I live life one day at a time and don't really think about the future.	2.7 (1.5)	2.8 (1.6)

When I look at the story of my life, I am pleased with how things have turned out.	4.2 (1.4)	4.1 (1.5)
My decisions are not usually influenced by what everyone else is doing.	4 (1.4)	3.9 (1.4)
The demands of everyday life often get me down.	3.5 (1.6)	3.3 (1.5)
I think it is important to have new experiences that challenge how you think about yourself and the world.	5.2 (1.1)	5.1 (1.2)
Maintaining close relationships has been difficult and frustrating for me.	3 (1.7)	2.8 (1.6)
I have a sense of direction and purpose in life.	4.2 (1.5)	4.2 (1.5)
In general, I feel confident and positive about myself.	4.1 (1.5)	4 (1.5)
I tend to worry about what other people think of me.	3.8 (1.5)	3.9 (1.6)
I do not fit very well with the people and the community around me.	2.8 (1.5)	2.7 (1.5)
When I think about it, I haven't really improved much as a person over the years.	2.3 (1.5)	2.3 (1.5)
I often feel lonely because I have few close friends with whom to share my concerns.	3.3 (1.8)	3.1 (1.7)
My daily activities often seem trivial and unimportant to me.	3.1 (1.6)	2.9 (1.6)
I feel like many of the people I know have gotten more out of life than I have.	3.2 (1.7)	3.1 (1.6)
I tend to be influenced by people with strong opinions.	3.1 (1.5)	3.2 (1.5)
I am quite good at managing the many responsibilities of my daily life.	4.3 (1.4)	4.4 (1.4)
I have the sense that I have developed a lot as a person over time.	4.8 (1.3)	4.6 (1.3)
I enjoy personal and mutual conversations with family members or friends.	5.1 (1.2)	5 (1.3)
I don't have a good sense of what it is I'm trying to accomplish in life.	3 (1.6)	3 (1.6)
I like most aspects of my personality.	4.5 (1.3)	4.4 (1.4)
I have confidence in my opinions, even if they are contrary to the general consensus.	4.6 (1.2)	4.4 (1.4)
I often feel overwhelmed by my responsibilities	4 (1.5)	3.8 (1.5)
I do not enjoy being in new situations that require me to change my old familiar ways of doing things.	3.4 (1.5)	3.4 (1.5)

People would describe me as a giving person, willing to share my time with others.	4.9 (1.2)	4.9 (1.3)
I enjoy making plans for the future and working to make them a reality.	4.6 (1.3)	4.6 (1.3)
In many ways, I feel disappointed about my achievements in life.	2.8 (1.5)	2.7 (1.5)
It's difficult for me to voice my own opinions on controversial matters.	3 (1.6)	3 (1.6)
I have difficulty arranging my life in a way that is satisfying to me.	3.2 (1.5)	3.1 (1.5)
For me, life has been a continuous process of learning, changing, and growth.	5 (1.2)	4.9 (1.2)
I have not experienced many warm and trusting relationships with others.	2.8 (1.7)	2.7 (1.7)
Some people wander aimlessly through life, but I am not one of them	4 (1.4)	3.9 (1.5)
My attitude about myself is probably not as positive as most people feel about themselves.	3.6 (1.7)	3.6 (1.6)
I judge myself by what I think is important, not by the values of what others think is important.	4.5 (1.3)	4.3 (1.4)
I have been able to build a home and a lifestyle for myself that is much to my liking.	4 (1.4)	3.9 (1.4)
I gave up trying to make big improvements or changes in my life a long time ago.	2.3 (1.4)	2.3 (1.4)
I know that I can trust my friends, and they know they can trust me.	4.9 (1.3)	4.8 (1.4)
I sometimes feel as if I've done all there is to do in life.	2 (1.4)	1.9 (1.4)
When I compare myself to friends and acquaintances, it makes me feel good about who I am.	3.5 (1.5)	3.4 (1.5)

Note: Table 10 shows mean and SD differences of the PWB items with current and pre-COVID-19 data. SD = standard deviation.

Limitations. A limitation was the cross-sectional nature of this study. Given the limited amount of research regarding SEA, cross-sectional data was needed to form an in-depth understanding of how SEA interacted with variables such as personal use, consequences, coping,

and wellbeing. Now that I have established or replicated significant relationships, longitudinal research is needed to test causal mechanisms. Future studies may look to follow an incoming college cohort and test the relationship between variables throughout the span of a typical student's collegiate career.

Future Directions. Future studies may benefit from gathering data on the interactions proposed in this study after in-person learning and access to college living has resumed. Comparing the findings from the current study to post COVID-19 data may provide important information into how living and socializing with peers' effects factors such as SEA, alcohol use, alcohol related consequences, wellbeing, and coping. Specific attention should be paid to how variables such as personal use may decrease as isolation and pandemic related distress decreases, or if alcohol related consequences increase as students have easier access to socially influenced drinking. Future studies may also benefit from looking at specific mental health outcomes such as depression, stress, and anxiety as these factors may provide further insight into how students are affected by SEA in other domains outside of wellbeing. Additional research is also needed to better understand how SEA interacts with wellbeing and whether adaptive coping strategies can be used as a protective factor for SEA outcomes.

Conclusions. Taken together, the significant interactions in this study tell a clear story regarding the deleterious outcomes of SEA. Students who are experiencing SEA are engaging in more personal alcohol use which is leading to increased alcohol related consequences. Even more concerning is that those students who are maladaptively coping with stressors, and are then exposed to SEA, are engaging in alcohol use to try and reduce their stress which is ultimately related to more use and increased consequences. These interactions highlight a dangerous pattern where harm caused by others leads to increased alcohol use resulting in harm caused to self.

Clinically these findings provide powerful incentive for screenings and interventions which assess for experiences of SEA. Without longitudinal data causal mechanisms cannot be established. However, I posit that SEA may be an important and overlooked factor in college student alcohol use. My findings provide credence to the theory that when students are subjected to SEA they use alcohol to cope with what has happened to them, and that this alcohol use which is motivated by the need to relieve distress, leads to more alcohol related consequences than typical use would result in. Whether or not causality is found, students who are reporting harmful levels of alcohol use or alcohol related consequences should also be screened for experiences of SEA. With this information clinicians can advocate for student placement in environments such as substance free housing, provide psychoeducation regarding the harmful nature of maladaptive coping, and provide substance use interventions which account for not only the individuals use but the potentially transmittable use of their peers. Alcohol use interventions should specifically target substance use coping and provide psychoeducation on how this form of coping ultimately results in more harm.

Empirically, this study expands not only on our understanding of SEA and how it effects student's personal use patterns, but it may also expand on the current understanding of motives for use. Current literature recognizes that some students drink to cope with negative emotions or even to feel more comfortable around their peers (Read et al., 2006). This study hopes to add to that literature base by identifying SEA as a stressor which leads students to coping through substance use or other maladaptive strategies.

References

Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. Economics Letters, 80(1), 123–129. https://doi.org/10.1016/S0165-1765(03)00032-6

Akgun, S., & Ciarrochi, J. (2003). Learned resourcefulness moderates the relationship between academic stress and academic performance. *Educational Psychology*, *23*(3), 287-294.

Baggio, S., Iglesias, K., & Rousson, V. (2018). Modeling count data in the addiction field: Some simple recommendations. *International journal of methods in psychiatric research*, *27*(1), e1585.

Barnes, G. M., Welte, J. W., & Dintcheff, B. (1992). Alcohol misuse among college students and other young adults: Findings from a general population study in New York State. *International Journal of the Addictions*, *27*(8), 917-934.

Bashir, A., & Hanif, R. (2019). Impact of Workplace Bullying on Psychological Wellbeing; Personality Traits as Moderators. *Pakistan Journal of Social Sciences (PJSS)*, *39*(1).

Blank, M. L., Connor, J., Gray, A., & Tustin, K. (2016). Alcohol use, mental well-being, self-esteem and general self-efficacy among final-year university students. *Social psychiatry and psychiatric epidemiology*, *51*(3), 431-441.

Blevins, C. E., Farris, S. G., Brown, R. A., Strong, D. R., & Abrantes, A. M. (2016). The role of self-efficacy, adaptive coping, and smoking urges in long-term cessation outcomes. *Addictive disorders & their treatment*, *15*(4), 183.

Boekeloo, B. O., Bush, E. N., & Novik, M. G. (2009). Perceptions about residence hall wingmates and alcohol-related secondhand effects among college freshmen. *Journal of American College Health*, *57*(6), 619-628.

Britton, P. C. (2004). The relation of coping strategies to alcohol consumption and alcohol-related consequences in a college sample. *Addiction Research & Theory*, *12*(2), 103-114.

Brougham, R. R., Zail, C. M., Mendoza, C. M., & Miller, J. R. (2009). Stress, sex differences, and coping strategies among college students. Current psychology, 28(2), 85-97.

Bush, K., Kivlahan, D. R., McDonell, M. B, Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. *Archives of Internal Medicine*, *158*, 1789-1795. doi:10.1001/archinte.158.16.1789

Carey, K. B., Scott-Sheldon, L. A., Carey, M. P., & DeMartini, K. S. (2007). Individual-level interventions to reduce college student drinking: A meta-analytic review. *Addictive behaviors*, *32*(11), 2469-2494.

Carter, A. C., Brandon, K. O., & Goldman, M. S. (2010). The college and noncollege experience: A review of the factors that influence drinking behavior in young adulthood. *Journal of studies on alcohol and drugs*, *71*(5), 742-750.

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4, 92-100.

Cabalatungan, S., & McCarthy, B. (2015). Second-hand effects of college drinking and educational experiences: Findings from an analysis of pooled cross-sections. *Drugs: Education, Prevention and Policy*, *22*(6), 463-469.

Chesney, M. A., Neilands, T. B., Chambers, D. B., Taylor, J. M., & Folkman, S. (2006). A validity and reliability study of the coping self-efficacy scale. *British journal of health psychology*, *11*(3), 421-437.

Chun, S., Sohn, A., Reid, E. A., Inot, R., Kim, M. K., Percoheles, G., ... & Wechsler, H. (2009). A comparison of alcohol secondhand effects among Korean and US College Students. Korean Journal of Health Education and Promotion, 26(5), 115-127.

Clay, J. M., & Parker, M. O. (2020). Alcohol use and misuse during the COVID-19 pandemic: a potential public health crisis?. The Lancet Public Health, 5(5), e259.

Cohen, S., Underwood, L. G., & Gottlieb, B. H. (Eds.). (2000). *Social support measurement and intervention: A guide for health and social scientists*. Oxford University Press.

Cooper, M. L., Russell, M., Skinner, J. B., Frone, M. R., & Mudar, P. (1992). Stress and alcohol use: moderating effects of gender, coping, and alcohol expectancies. *Journal of abnormal psychology*, *101*(1), 139.

Corbin, W. R., Farmer, N. M., & Nolen-Hoekesma, S. (2013). Relations among stress, coping strategies, coping motives, alcohol consumption and related problems: A mediated moderation model. *Addictive Behaviors*, *38*(4), 1912-1919.

Dale, C. E., & Livingston, M. J. (2010). The burden of alcohol drinking on co-workers in the Australian workplace. *Medical journal of Australia*, *193*(3), 138-140.

DeMartini, K. S., & Carey, K. B. (2012). Optimizing the use of the AUDIT for alcohol screening in college students. *Psychological Assessment*, *24*, 954–963. doi:10.1037/a0028519

Diep, P. B., Knibbe, R. A., Giang, K. B., & De Vries, N. (2015). Secondhand effects of alcohol use among students in Vietnam. *Global health action*, *8*(1), 25848.

Ebner, N. C., Freund, A. M., & Baltes, P. B. (2006). Developmental changes in personal goal orientation from young to late adulthood: from striving for gains to maintenance and prevention of losses. *Psychology and aging*, *21*(4), 664.

Enser, B. J., Appleton, J. V., & Foxcroft, D. R. (2017). Alcohol-related collateral harm, the unseen dimension? Survey of students aged 16–24 in Southern England. *Drugs: Education, Prevention and Policy*, *24*(1), 40-48.

Evans, D. M., & Dunn, N. J. (1995). Alcohol expectancies, coping responses and self-efficacy judgments: a replication and extension of Copper et al.'s 1988 study in a college sample. *Journal of Studies on Alcohol*, *56*(2), 186-193.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160.

Ferris, J. A., Laslett, A. M., Livingston, M., Room, R., & Wilkinson, C. (2011). The impacts of others' drinking on mental health. *Medical Journal of Australia*, *195*, S22-S26.

Fox, R., Neha, T., & Jose, P. E. (2018). Tū Māori Mai: Māori cultural embeddeness improves adaptive coping and wellbeing for Māori adolescents. New Zealand Journal of Psychology (Online), 47(2), 14-24.

Geiger, B. B., & MacKerron, G. (2016). Can alcohol make you happy? A subjective wellbeing approach. Social Science & Medicine, 156, 184-191.

Giesbrecht, N., Cukier, S., & Steeves, D. A. N. (2010). Collateral damage from alcohol: implications of'second-hand effects of drinking'for populations and health priorities.

Gelman, A., Carlin, J. B., Stern, H. S., & Rubin, D. B. (2004). *Bayesian data analysis* (2nd ed.). Boca Raton, FL: Chapman & Hall.

Greenfield, T. K., Karriker-Jaffe, K. J., Kerr, W. C., Ye, Y., & Kaplan, L. M. (2016). Those harmed by others' drinking in the US population are more depressed and distressed. *Drug and alcohol review*, *35*(1), 22-29.

Greenfield, T. K., Ye, Y., Kerr, W., Bond, J., Rehm, J., & Giesbrecht, N. (2009). Externalities from alcohol consumption in the 2005 US National Alcohol Survey: implications for policy. *International journal of environmental research and public health*, *6*(12), 3205-3224.

Hasking, P., Lyvers, M., & Carlopio, C. (2011). The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour. *Addictive behaviors*, *36*(5), 479-487.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication monographs*, *76*(4), 408-420.

Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among US college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs, Supplement*, (16), 12-20.

Kahler, C. W., Hustad, J., Barnett, N. P., Strong, D. R., & Borsari, B. (2008). Validation of the 30-day version of the Brief Young Adult Alcohol Consequences Questionnaire for use in longitudinal studies. *Journal of studies on alcohol and drugs*, *69*(4), 611-615.

Kahler, C. W., Strong, D. R., Read, J. P., Palfai, T. P., & Wood, M. D. (2004). Mapping the continuum of alcohol problems in college students: a Rasch model analysis. *Psychology of Addictive Behaviors*, *18*(4), 322.

Karriker-Jaffe, K. J., Greenfield, T. K., & Kaplan, L. M. (2017). Distress and alcohol-related harms from intimates, friends, and strangers. *Journal of substance use*, *22*(4), 434-441.

Karwacki, S. B., & Bradley, J. R. (1996). Coping, drinking motives, goal attainment expectancies and family models in relation to alcohol use among college students. *Journal of Drug Education*, *26*(3), 243-255.

Kassel, J. D., Bornovalova, M., & Mehta, N. (2007). Generalized expectancies for negative mood regulation predict change in anxiety and depression among college students. *Behaviour research and therapy*, *45*(5), 939-950.

Keyes, C. L. (2005). Chronic physical conditions and aging: Is mental health a potential protective factor?. *Ageing International*, *30*(1), 88-104.

Kuppens, S., Moore, S. C., Gross, V., Lowthian, E., & Siddaway, A. P. (2020). The enduring effects of parental alcohol, tobacco, and drug use on child well-being: A multilevel meta-analysis. *Development and psychopathology*, *32*(2), 765-778.

Langley, J. D., Kypri, K., & Stephenson, S. C. (2003). Secondhand effects of alcohol use among university students: computerised survey. *Bmj*, *327*(7422), 1023-1024.

Lazarus, R., & Folkman, S. (1984). Stress, appraisal, and coping. New York: Springer Publishing Company.

Livingston, M., Wilkinson, C., & Laslett, A. M. (2010). Impact of heavy drinkers on others' health and well-being. Journal of studies on alcohol and drugs, 71(5), 778-785.

Longo, L. M. (2019). Drinking with those who mind: College students' beliefs about secondhand effects of alcohol and eelated intentions to drink (Doctoral dissertation, State University of New York at Albany).

Lovibond, Peter F., and Sydney H. Lovibond. "The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories." Behaviour research and therapy 33.3 (1995): 335-343.

Mason, W. A., & Spoth, R. L. (2011). Longitudinal associations of alcohol involvement with subjective well-being in adolescence and prediction to alcohol problems in early adulthood. Journal of youth and adolescence, 40(9), 1215-1224.

Marcus, J., & Siedler, T. (2015). Reducing binge drinking? The effect of a ban on late-night off-premise alcohol sales on alcohol-related hospital stays in Germany. *Journal of Public Economics*, *123*, 55-77.

McCabe, C. J., Halvorson, M. A., King, K. M., Cao, X., & Kim, D. S. (2020). Interpreting interaction effects in generalized linear models of nonlinear probabilities and counts. Multivariate Behavioral Research, 1-27.

Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American journal of Health studies*, *16*(1), 41.

Morozink, J. A., Friedman, E. M., Coe, C. L., & Ryff, C. D. (2010). Socioeconomic and psychosocial predictors of interleukin-6 in the MIDUS national sample. Health psychology, 29(6), 626.

Muthén, B., & Asparouhov, T. (2012). Bayesian structural equation modeling: A more flexible representation of substantive theory. *Psychological Methods, 17,* 313–335. http://dx.doi.org/10.1037/a0026802

Muthén, L.K. and Muthén, B.O. (1998-2012). Mplus User's Guide. Seventh Edition.

Napper, L. E., Fisher, D. G., Reynolds, G. L., & Johnson, M. E. (2010). HIV risk behavior self-report reliability at different recall periods. AIDS and Behavior, 14(1), 152-161.

National Institute of Health (NIH). (2020). College drinking. *National Institute on Alcohol Abuse and Alcoholism.* Retrieved from https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/college-drinking

National Survey on Drug Use and Health (NSDUH-2018). (2018). Retrieved from https://www.datafiles.samhsa.gov/study/national-survey-drug-use-and-health-nsduh-2018-nid18757

Neal, D. J., & Simons, J. S. (2007). Inference in regression models of heavily skewed alcohol use data: A comparison of ordinary least squares, generalized linear models, and bootstrap resampling. *Psychology of Addictive Behaviors, 21*(4), 441-452.

Park, C. L., Folkman, S., & Bostrom, A. (2001). Appraisals of controllability and coping in caregivers and HIV+ men: Testing the goodness-of-fit hypothesis. *Journal of Consulting and Clinical psychology*, *69*(3), 481.

Park, C. J., Freeman, L. K., Hall, N. A., Singh, S., Carey, K. B., Merrill, J. E., ... & Miller, M. B. (2021). Gender, acculturation, and alcohol-related consequences among college students of color. Journal of American college health, 1-9.

Patrick, M. E., & Maggs, J. L. (2011). College students' evaluations of alcohol consequences as positive and negative. Addictive behaviors, 36(12), 1148-1153.

Perkins, H. W. (2002). Surveying the damage: a review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol, supplement*, (14), 91-100.

Pierceall, E. A., & Keim, M. C. (2007). Stress and coping strategies among community college students. Community College Journal of Research and Practice, 31(9), 703–712.

Presley, C. A., & Pimentel, E. R. (2006). The introduction of the heavy and frequent drinker: a proposed classification to increase accuracy of alcohol assessments in postsecondary educational settings. *Journal of studies on alcohol*, *67*(2), 324-331.

Rafnsson, F. D., Jonsson, F. H., & Windle, M. (2006). Coping strategies, stressful life events, problem behaviors, and depressed affect. *Anxiety, Stress, and Coping*, *19*(3), 241-257.

Ramirez, J. J., Rhew, I. C., Patrick, M. E., Larimer, M. E., & Lee, C. M. (2020). A daily-level analysis of moderators of the association between alcohol expectancies and alcohol use among college student drinkers. *Substance Use and Misuse, 55*(6), 973-982. https://doi.org/10.1080/10826084.2020.1717535

Read, J. P., Kahler, C. W., Strong, D. R., & Colder, C. R. (2006) Development and preliminary validation of the young adult alcohol consequences questionnaire. *Journal of Studies on Alcohol, 67*(1), 169-177. https://doi.org/10.15288/jsa.2006.67.169

Read, J. P., Wood, M. D., Kahler, C. W., Maddock, J. E., & Palfai, T. P. (2003). Examining the role of drinking motives in college student alcohol use and problems. Psychology of addictive behaviors, 17(1), 13.

Rehm, J., Kilian, C., Ferreira-Borges, C., Jernigan, D., Monteiro, M., Parry, C. D., ... & Manthey, J. (2020). Alcohol use in times of the COVID 19: Implications for monitoring and policy. Drug and Alcohol Review, 39(4), 301-304.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, *57*(6), 1069.

Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and psychosomatics*, *83*(1), 10-28.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological science, 22(11), 1359-1366.

Sirois, F. M., & Kitner, R. (2015). Less adaptive or more maladaptive? A meta–analytic investigation of procrastination and coping. *European Journal of Personality*, *29*(4), 433-444.

Smith, T. W. (2006). Personality as risk and resilience in physical health. *Current directions in psychological science*, *15*(5), 227-231.

Stiles, M. (2013). Secondhand effects of substance use for rural college students. *Journal of Human Behavior in the Social Environment*, *23*, 529–535. doi:10.1080/10911359.2013.765819

Stiles, M., & Rice, C. (2019). Exploring the association between alcohol, marijuana, and secondhand effects with rural college students. *Journal of Human Behavior in the Social Environment*, *29*(2), 161-176.

Substance Abuse and Mental Health Services Administration (SAMHSA-2019). (2020). 2019 National Survey on Drug Use and Health: Detailed Tables. Center for Behavioral Health Statistics and Quality. https://www.samhsa.gov/data/report/2019-nsduh-detailed-tables. Updated 2020. Accessed April 1, 2021.

Thompson, K., Wood, D., & MacNevin, P. D. (2019). Sex differences in the impact of secondhand harm from alcohol on student mental health and university sense of belonging. Addictive behaviors, 89, 57-64.

Wechsler, H., Dowdall, G. W., Maenner, G., Gledhill-Hoyt, J., & Lee, H. (1998). Changes in binge drinking and related problems among American college students between 1993 and 1997 results of the Harvard School of Public Health College Alcohol Study. *Journal of American college health*, *47*(2), 57-68.

Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health College Alcohol Study surveys: 1993–2001. Journal of American college health, 50(5), 203-217.

Wechsler, H., Lee, J. E., Nelson, T. F., & Lee, H. (2001). Drinking levels, alcohol problems and secondhand effects in substance-free college residences: results of a national study. Journal of Studies on Alcohol, 62(1), 23-31.

Wechsler, H., Moeykens, B., Davenport, A., Castillo, S., & Hansen, J. (1995). The adverse impact of heavy episodic drinkers on other college students. *Journal of studies on alcohol*, *56*(6), 628-634.

Wechsler, H., & Nelson, T. F. (2008). What we have learned from the Harvard School of Public Health College Alcohol Study: Focusing attention on college student alcohol consumption and the environmental conditions that promote it. *Journal of Studies on alcohol and Drugs*, *69*(4), 481-490.

White, A., & Hingson, R. (2013). The burden of alcohol use: excessive alcohol consumption and related consequences among college students. *Alcohol research: current reviews*.

Wiggins, B. J., & Chrisopherson, C. D. (2019). The replication crisis in psychology: An overview for theoretical and philosophical psychology. Journal of Theoretical and Philosophical Psychology, 39(4), 202.

Zullig, K. J., Valois, R. F., Huebner, E. S., Oeltmann, J. E., & Drane, J. W. (2001). Relationship between perceived life satisfaction and adolescents' substance abuse. Journal of Adolescent Health, 29(4), 279-288.

Appendix

Appendix A

Demographic Questions:

What is your age?

What is your weight in pounds?

How do you define your Race?
- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Another _____
- Do not wish to respond

How do you define your Ethnicity?
- Hispanic or Latinx
- Not Hispanic or Latinx
- Another _____
- Do not wish to respond

How do you define your Sexual Orientation/Preference?
- Write in _____

What are the pronouns you use?
Note that "pronouns you use" refers to the pronouns that you use to identify your gender or lack thereof.
- He/Him/HIs
- She/Her/Hers
- They/Them/Theirs
- Xe/Xem/Xyr/Xir
- Other _____
- Do not wish to respond

How do you define your Gender Identity?
Note that Cisgender terms Cis Man and Cis Woman denote individuals whose sense of gender identity corresponds with the sex assigned to them at birth.
- Agender
- Androgynous

- Cis Man
- Cis Woman
- Demiboy
- Demigirl
- Gender Fluid
- Gender Non-Binary
- Gender Non-Conforming
- Gender Fluid
- Gender Non-Binary
- Gender Non-Conforming
- Genderless
- Genderqueer
- Man
- Third Gender
- Trans Man
- Trans Woman
- Transgender
- Transperson
- Two Spirit
- Woman
- Other _____
- Choose not to respond

What was the sex assigned to you at birth?

- Male
- Female
- Intersex
- Another _____
- Do not wish to respond

Appendix B

Secondhand Effects of Alcohol Questionnaire:
Since the beginning of the school year, how often have you experienced any of the following because of other students' drinking?

1 = Daily or almost daily
2 = Weekly
3 = Monthly
4 = Less than once per month
5 = Never

1. Been insulted or humiliated
2. Had a serious argument or quarrel
3. Been pushed, hit, or assaulted
4. Had your property damaged
5. Had to "baby-sit" or take care of another student who drank too much
6. Found vomit in the halls or bathroom of your residence
7. Had your studying interrupted
8. Had your sleep interrupted
9. Experienced an unwanted sexual advance
10. Been a victim of sexual assault or 'date-rape'

Appendix C

Brief Young Adult Alcohol Consequences Questionnaire:
Below is a list of things that sometimes happen to people either during, or after they have been drinking alcohol. Next to each item below, please select either the YES or NO column to indicate whether that item describes something that has happened to you **IN THE PAST MONTH.**

In the **past month...**

0 = No
1 = Yes

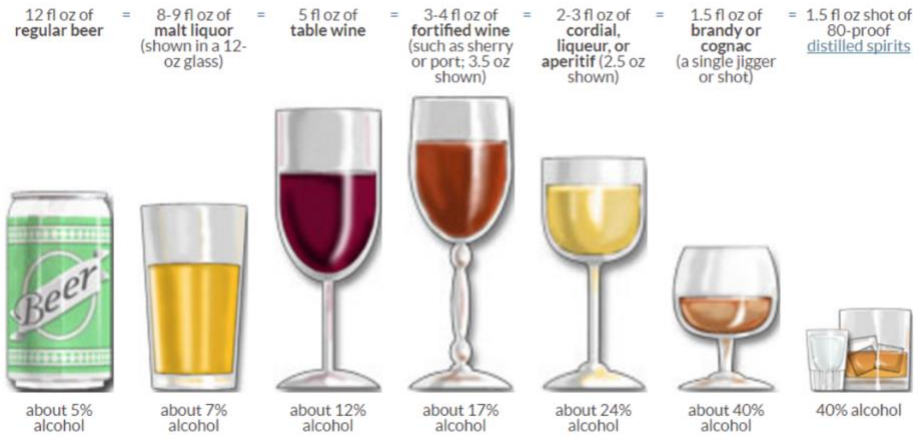
1. While drinking, I have said or done embarrassing things.
2. I have had a hangover (headache, sick stomach) the morning after I had been drinking.
3. I have felt very sick to my stomach or thrown up after drinking.
4. I often have ended up drinking on nights when I had planned not to drink.
5. I have taken foolish risks when I have been drinking.
6. I have passed out from drinking.
7. I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.
8. When drinking, I have done impulsive things that I regretted later.
9. I've not been able to remember large stretches of time while drinking heavily.
10. I have driven a car when I knew I had too much to drink to drive safely.
11. I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.
12. My drinking has gotten me into sexual situations I later regretted.
13. I have often found it difficult to limit how much I drink.
14. I have become very rude, obnoxious or insulting after drinking.
15. I have woken up in an unexpected place after heavy drinking.
16. I have felt badly about myself because of my drinking.
17. I have had less energy or felt tired because of my drinking.
18. The quality of my work or schoolwork has suffered because of my drinking.
19. I have spent too much time drinking.
20. I have neglected my obligations to family, work, or school because of drinking.
21. My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents , or other near relatives.
22. I have been overweight because of drinking.
23. My physical appearance has been harmed by my drinking.
24. I have felt like I needed a drink after I'd gotten up (that is, before breakfast).

Appendix D

Supplementary Alcohol Behavior Question:

Think about your drinking behaviors during the last month (i.e., past 30 days) for the following question. With respect to alcohol consumption, 1 standard drink is equivalent to 12 oz beer OR 5 oz wine OR 1.5oz shot of liquor straight or in a mixed drink.

Please review the image below carefully as it will help you understand what exactly counts as a standard drink of alcohol.



1. Think of the day you consumed the most alcohol in the last month: How many standard drinks did you consume on that day?

Appendix E

Alcohol Use Disorders Identification Test-Concise:

Please select the answer that is correct for you.

1. How often do you have a drink containing alcohol?
    a. Never
    b. Monthly or less
    c. 2-4 times a month
    d. 2-3 times a week
    e. 4 or more times a week 2.
2. How many standard drinks containing alcohol do you have on a typical day?
    a. 1 or 2
    b. 3 to 4
    c. 5 to 6
    d. 7 to 9
    e. 10 or more 3.
3. How often do you have six or more drinks on one occasion?
    a. Daily or almost daily
    b. Weekly
    c. Monthly
    d. Less than monthly
    e. Never

Appendix F

Psychological Well-being Scales:

Please indicate your degree of agreement to the following sentences.

1 = Strongly disagree
2
3
4
5 = Strongly agree

1. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.
2. In general, I feel I am in charge of the situation in which I live.
3. I am not interested in activities that will expand my horizons.
4. Most people see me as loving and affectionate.
5. I live life one day at a time and don't really think about the future.
6. When I look at the story of my life, I am pleased with how things have turned out.
7. My decisions are not usually influenced by what everyone else is doing.
8. The demands of everyday life often get me down.
9. I think it is important to have new experiences that challenge how you think about yourself and the world.
10. Maintaining close relationships has been difficult and frustrating for me.
11. I have a sense of direction and purpose in life.
12. In general, I feel confident and positive about myself.
13. I tend to worry about what other people think of me.
14. I do not fit very well with the people and the community around me.
15. When I think about it, I haven't really improved much as a person over the years.
16. I often feel lonely because I have few close friends with whom to share my concerns.
17. My daily activities often seem trivial and unimportant to me.
18. I feel like many of the people I know have gotten more out of life than I have.
19. I tend to be influenced by people with strong opinions.
20. I am quite good at managing the many responsibilities of my daily life.
21. I have the sense that I have developed a lot as a person over time.
22. I enjoy personal and mutual conversations with family members or friends.
23. I don't have a good sense of what it is I'm trying to accomplish in life.
24. I like most aspects of my personality.
25. I have confidence in my opinions, even if they are contrary to the general consensus.
26. I often feel overwhelmed by my responsibilities
27. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.
28. People would describe me as a giving person, willing to share my time with others.
29. I enjoy making plans for the future and working to make them a reality.
30. In many ways, I feel disappointed about my achievements in life.

31. It's difficult for me to voice my own opinions on controversial matters.
32. I have difficulty arranging my life in a way that is satisfying to me.
33. For me, life has been a continuous process of learning, changing, and growth.
34. I have not experienced many warm and trusting relationships with others.
35. Some people wander aimlessly through life, but I am not one of them
36. My attitude about myself is probably not as positive as most people feel about themselves.
37. I judge myself by what I think is important, not by the values of what others think is important.
38. I have been able to build a home and a lifestyle for myself that is much to my liking.
39. I gave up trying to make big improvements or changes in my life a long time ago.
40. I know that I can trust my friends, and they know they can trust me.
41. I sometimes feel as if I've done all there is to do in life.
42. When I compare myself to friends and acquaintances, it makes me feel good about who I am.

Note: Subscale Scoring

1. Autonomy: 1,7,13,19,25, 31, 37
2. Environmental Mastery: 2,8,14,20,26,32,38
3. Personal Growth: 3,9,15,21,27,33,39
4. Positive Relations: 4,10,16,22,28,34,40
5. Purpose in life: 5,11,17,23,29,35,41
6. Self-acceptance: 6,12,18,24,30,36,42

Recode negative phrased items: #3,5,10,13,14,15,16,17,18,19,23,26,27,30,31,32, 34, 36, 39, 41. (i.e., if the scored is 6 in one of these items, the adjusted score is 1; if 5, the adjusted score is 2 and so on...)

Appendix G

Brief COPE

These items deal with ways you've been coping with the stress in your life. There are many ways to try to deal with problems. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real.".
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Note: Subscale Scoring

1. Self-distraction: 1,19 (Avoidant)

2. Active coping: 2, 7 (Approach)
3. Denial: 3, 8 (Avoidant)
4. Substance use: 4, 11 (Avoidant)
5. Emotional support: 5, 15 (Approach)
6. Use of informational support: 10, 23 (Approach)
7. Behavioral disengagement: 6, 16 (Avoidant)
8. Venting: 9, 21 (Avoidant)
9. Positive reframing: 12, 17 (Approach)
10. Planning: 14, 25 (Approach)
11. Humor*: 18, 28
12. Acceptance: 20, 24 (Approach)
13. Religion*: 22, 27
14. Self-blame: 13, 26 (Avoidant)

*Humor and Religion are neither approach or avoidance coping